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I. General Information

Purpose

This manual provides information for the servicing of **SCIFIT** SX500, SX1000, SX7000, and SXT7000 cordless ellipticals. It uses systematic troubleshooting procedures to address problems that may arise with the cordless elliptical. The actions taken to resolve problems must be performed in the order stated. Deviating from this sequence may cause damage to the equipment, lead to unnecessary repairs, and/ or void the warranty.

Technical Support

For further assistance in the service of **SCIFIT** products, please call **(800) 745-1373 or (918) 359-2000, ext 3**. We can also be reached by fax at **(918) 359-2045** or by e-mail at **service@scifit.com**. The Product Support department is staffed from 7 AM to 6 PM CST Monday through Friday. A voicemail service is available 24 hours daily for recording messages to request technical support and to order replacement parts. Our mailing address is **5151 S. 110th E. Avenue, Tulsa, OK 74146**.

Please have the following information prior to calling product support:

- Model number of equipment
- Serial number of equipment
- Point of contact name, address, and phone number
- Detailed description of symptoms encountered

SCIFIT Statement of Warranty

SCIFIT warranties new products against defective workmanship and/ or materials under normal and proper use subject to the following limitations:

1. SCIFIT's obligation to the original purchaser shall apply to both parts and cost of labor required to replace or repair a defective product for a period of one (1) year from the user purchase date as documented by the warranty card. If the customer fails to return the warranty card, the date of shipment from the factory is used. Thereafter, for a period of two (2) years, such obligation shall extend only to the supply of replacement parts or products with any labor costs associated with such replacement or repair to be at the Buyer's expense.

2. SCIFIT's obligation shall be limited to repairing or replacing defective parts. ***No allowance shall be granted for repairs made by Buyer without SCIFIT's prior written approval.*** The decision to replace or repair shall be solely at SCIFIT's election.

3. SCIFIT's warranty does not apply to parts requiring replacement or repair due to abnormal wear and tear, improper use, corrosion (perspiration), improper maintenance, improper rated grounded or dedicated electrical circuits, or improper storage, nor does it apply where all or part of the product has been altered from its original state.

4. **THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARISING BY LAW OR OTHERWISE INCLUDING WARRANTY OR MERCHANTABILITY OF FITNESS FOR PARTICULAR PURPOSE, AND IS IN LIEU OF ALL OTHER LIABILITIES OF SCIFIT INCLUDING DIRECT, INDIRECT, SPECIAL AND CONSEQUENTIAL DAMAGES OR PENALTIES EXPRESSED OR IMPLIED WHETHER ARISING OUT OF CONTRACT, NEGLIGENCE, OR OTHER TORT.**

5. Certain wear items are excluded from warranty coverage unless determined to be defective. These items include, but are not limited to:
   Rubber Grips
   Rail Roller Wheels
   Rubber Foot Beds
   Bio-Flex Cushions

6. The following items are covered for a period of one (1) year only:
   Contact Heart Rate Grips
   Heart Rate PCB/ Transmitter

Freight and Shipping

SCIFIT is NOT responsible for the repair or replacement of any unit or part damaged during transit or installation. Fire, flood, and acts of God are NOT covered under this warranty. The customer is responsible for pursuing all freight damage claims with the appropriate transit company. ***If the customer signs for freight-damaged goods without noting the damage on the bill of lading, the customer is solely responsible for the cost of repair or replacement for such freight damage.***

Parts Supply

During the first 30 days, warranty parts will be shipped via next day overnight delivery, excluding international shipments. Determination must be made before 2:00 p.m. CST on any given weekday for next day delivery. After 30 days, parts will be shipped via ground shipment. The customer is welcome to request overnight or second day parts shipping at the customer's expense. If requested, SCIFIT will charge the customer's UPS or Federal Express account, or COD the difference in freight cost between ground shipment and overnight or second day.

Return Parts

In order to research problems and ensure they do not reoccur, the rapid return of defective parts is our biggest help! Thank you in advance for your assistance.

On electronics orders, a $100.00 core charge is assessed to each printed circuit board. This amount will be credited once the boards have been received by SCIFIT. All defective parts must be returned to the SCIFIT factory within 20 days of receipt of replacement part for invoice credit. Otherwise, SCIFIT will expect payment on the core charge net 30 days.

Please follow these three (3) easy steps for returning parts:

Step 1: Keep the box and packing material in which the new parts arrived. Locate the enclosed prepaid UPS return label. The return label is only for the parts that need to be returned as denoted on the picking ticket.

Step 2: Wrap the defective part and place in the box for a safe return. Include a copy of the picking ticket that came with the replacement part.

Step 3: When the parts have been packaged, place the prepaid UPS return label on the outside of the box. Drop the package at any UPS service center or hand the package to any UPS driver.

When all of the parts are received and inspected at the factory, a credit will be issued for the original parts invoice. **Attention service companies: Warranty labor invoices will NOT be paid until required defective parts are returned to the factory.**

Installation

SCIFIT is NOT responsible for the repair or replacement of any unit or part damaged during installation. The customer is responsible for inspection of each unit and part for damage at the time of installation. The customer is responsible for pursuing all damage claims with the installer.

Service Labor

Where applicable, SCIFIT Product Support will arrange a local field service technician to provide field support. Every effort will be made to schedule service during the two (2) working days following notification of a problem or as soon as repair parts are available to the field service technician. Where possible, parts will be supplied in advance of the field service technicians so that the product is repaired with one (1) call. ***All jobs to be performed under labor warranty must have SCIFIT's prior written approval or they will not be paid.***

Preventative Maintenance

After training, always wipe down your SCIFIT exercise product. Perspiration that continuously settles on the frame, upholstery, casings, and control panels may eventually cause rust or damage. Damage resulting from lack of maintenance will NOT be covered under warranty.

Preventative maintenance, completed according to the schedule below, will keep your SCIFIT elliptical functioning properly. We realize your time is valuable and have kept these maintenance items to a minimum. This preventative maintenance schedule assumes the equipment is utilized 6 to 8 hours per day. If the equipment is utilized to a greater extent, the maintenance schedule must be adjusted accordingly.

Machine	Weekly	Monthly	6 Months	Yearly
Cordless Ellipticals	Clean exterior and TeleRails. See Note 1	Check Bio-Flex Cushions, replace if necessary.		Inspect composite bearings on TeleRails for wear.

Note 1: Clean the console with a damp cloth. Use mild soap and warm water. Dry with a clean towel. The rest of the machine can be cleaned using common household cleaners.

II. Theory of Operations

The following is a theory of operation that encompasses all the electrical components, their functions, and how they interact with each other.

Independent electrical components found in SCIFIT's Cordless product line:

1. Lower PCB (Power Supply)
2. Upper PCB (Display)
3. Generator/Electromagnetic Brake
4. 12 Volt Battery
5. Wall Pack Receptacle
6. Hand Grip Heart rate PCB (HG HR)
7. Wireless Heart rate PCB (Polar)

Component Functions

1. Lower PCB (Power Supply)
    - A. Converts the12 to 400 volts AC from the generator into 12 volts DC using switching power supply technology.
    - B. Provides 12 volts DC to upper PCB.
    - C. Accepts 12 volts DC from either the battery or wall pack transformer if unavailable from the generator
    - D. Receives Pulse Width Modulation (PWM) signal from the upper PCB for brake control.
    - E. Contains Hi-power MOSFET circuitry that controls the brake.

2. Upper PCB (Display)
    - A. Accepts commands from a user.
    - B. Displays information to the user.
    - C. Regulates 12 volts DC from lower PCB down to 8 volts DC and 5 volts DC.
    - D. Operates the 8 and 5 volt DC serial communications (c-safe and cardio-key)
    - E. Provides 5 Volts DC to the contact and wireless heart rate jacks.
    - F. Receives signals from the contact and wireless heart rate PCB's.
    - G. Contains 5 volt DC display (LED) drivers.
    - H. Contains the 5 volt DC memory and processor components.
    - I. Provides PWM signal to lower PCB for brake control.

3. Generator/Electromagnetic Brake

    Generator:
    - o A three (3) phase generator that produces 0 to 400 volts AC depending on the RPM's.
    - o Provides AC voltage to the lower PCB.

Electromagnetic Brake
- An eddie current transformer that uses rising and collapsing electromagnetic fields to slow down the generator magnet traveling through it's field.
- Controlled by the lower PCB.

4. 12 Volt DC Battery
   A. 12 volt sealed lead acid 1.3 Amp Hour Battery.
   B. Provides 12 Volts DC to lower PCB during:
      - Pause mode
      - Between intervals
      - Provides power for 15 seconds after generator stops.

5. Wall Pack Receptacle
   A. 12 volt DC input receptacle that accepts voltage from a DC wall pack.
   B. Provides 12 volts DC to lower PCB when a wall pack is connected to it.
   C. Aids in battery charging.

6. Hand Grip (Contact) Heart Rate (HG HR) PCB
   A. Outputs a square wave to the upper PCB.
   B. Equipped with right and left grip inputs.
   C. Power and ground is provided by the upper PCB.

7. Wireless Heart rate PCB
   A. Outputs a square wave to the upper PCB.
   B. Has a 30" range and position is critical.
   C. Power and ground is provided by the upper PCB.

System Functions

Starting the Machine

A. Pedaling the machine rotates the generator, which generates a current to power the electronics. A minimum of 13 RPM or 10 FPM must be maintained to keep machine powered up.

B. The generator provides AC voltage to the lower PCB. The lower PCB then provides DC voltage to the upper PCB.

C. The User controls the resistance by selecting a level on the display. The display sends a PWM signal which varies, depending on the level selected. The signal travels through the ribbon cable to the lower PCB. The lower PCB sends a square wave signal to the transformer on the brake which is proportionate to the amount of resistance commanded.

D. The brake LED on the lower PCB, labeled D38 on older units and D19 on newer units, will illuminate any time braking is applied. The intensity of the LED is proportional to the level of resistance.

E. The battery is charged anytime there is more than 13 RPM's present.

Stopping the unit

A. When pedaling is discontinued, the brake continues to spin.
B. The battery will engage once the actual RPM's dip below 13.
C. The battery remains active for 15 seconds and then a transistor that connects the battery to the rest of the lower PCB is unlatched. The transistor will remain unlatched until the unit sees an rpm value above 13 rpm's.

Using the Wall Pack

A. Using the wall pack will allow the machine to be powered up without pedaling. Quick Start or any other program can be selected without have to pedal first. The machine will be powered up constantly when the wall pack is in use.

III. Mechanical Troubleshooting

A. Mechanical Troubleshooting Table

Problem	Possible Reasons	Solutions
TeleRails lock up while operating.	Faulty lower PCB.	Replace lower PCB. (P. 26-29)
TeleRails are locked or hard to move.	Drive pulley moved over and is stuck against frame.	Realign drive pulley. (P. 60-61)
Scraping or knocking noise from inside the unit.	Drive pulley moved over. Spindle crank shaft bearings bad. Idler is bad. Brake pulley is loose. Brake bearings are bad. TeleRails hitting side cover.	Realign drive pulley. (P. 60-61) Replace bearings. (P. 60-61) Replace idler. (P. 51) Fix or replace brake. (P. 49-50) Replace brake. (P. 49-50) Realign TeleRails or trim side cover. (P. 58-59)
Scraping noises from inside the TeleRails.	Interior rollers are bad. Lateral rollers are bad.	Replace interior rollers. (P. 56-57) Replace lateral rollers. (P. 54-55)
Metal shavings left at the rear of the TeleRail system.	TeleRail is out of alignment. Lateral rollers are bad.	Realign crank arms. (P. 59) Replace lateral rollers. (P. 54-55)
Belt slipping.	Belt too loose.	Tension belt. (P. 62-63)
One side TeleRail slips or clunks when rotated.	Bolts on the crank arm are loose. Woodruff key is missing.	Verify Woodruff key is in place and tighten bolts. (P. 59) Replace woodruff key. (P. 59)
Black TeleRail moves more than 1/8" side to side on spindle.	Missing snap ring. Missing IGUS washer.	Replace snap ring. (P. 58-59) Replace IGUS washer. (P. 58-59)
Clunking underneath pedals.	Cushion under saddle are damaged or missing. Loose bolt on Bio-Flex pedal assembly. Saddle IGUS bearings worn.	Fix or replace cushions. (P. 52) Tighten bolts. Replace saddle IGUS bearings. (P. 53)

IV. Electrical Troubleshooting

A. Electrical Troubleshooting Table

Problem	Possible Reasons	Solutions
No lights are showing on the upper PCB at idle.	Unit is not in use.	Start rotating TeleRails. Unit only stays lit for 15 seconds after use unless a wall pack is in use.
No lights on upper PCB when TeleRails are rotating.	Brake is shorted to the frame. Bad Telco or ribbon cable connection. Faulty lower PCB. Faulty upper PCB.	See flowchart. (P. 13) See flowchart. (P. 13) See flowchart. (P. 13) See flowchart. (P.13)
Lights on the upper PCB are dim.	Faulty lower PCB.	Replace lower PCB. (P. 26-29)
Lights on the upper PCB are frozen.	Faulty upper PCB.	Replace upper PCB. (P. 18-25)
Lights on the upper PCB flicker and then go dead.	Bad Telco or ribbon cable connection. Faulty lower PCB. Faulty upper PCB.	Fix connection or replace cable. Replace lower PCB. (P. 26-29) Replace upper PCB. (P. 18-25)
Lights on upper PCB go out as soon as you stop rotating TeleRails or change direction.	Battery is weak. Bad brake to lower PCB connection.	Charge battery with wall pack. If problem continues, replace battery. (P. 30) Fix connection.
"PAUSED" is displayed in top display window.	The PAUSE/CLEAR button has been pressed during program.	Press START to resume program or PAUSE/CLEAR to return to start up screen.
Display resets after starting program.	Bad Telco or ribbon connection. 13 RPMs not maintained. Faulty upper PCB.	Fix connection or replace cable. Maintain 13+ RPMs to keep the upper PCB lit. Replace upper PCB. (P. 18-25)
Upper PCB won't light up without use of wall pack.	Bad brake to lower PCB connection. Faulty lower PCB. Brake shorted to monocoque.	Fix connection. Replace lower PCB. (P. 26-29) Fix short or replace brake. (P. 49-50)

Electrical Troubleshooting Table (cont.)

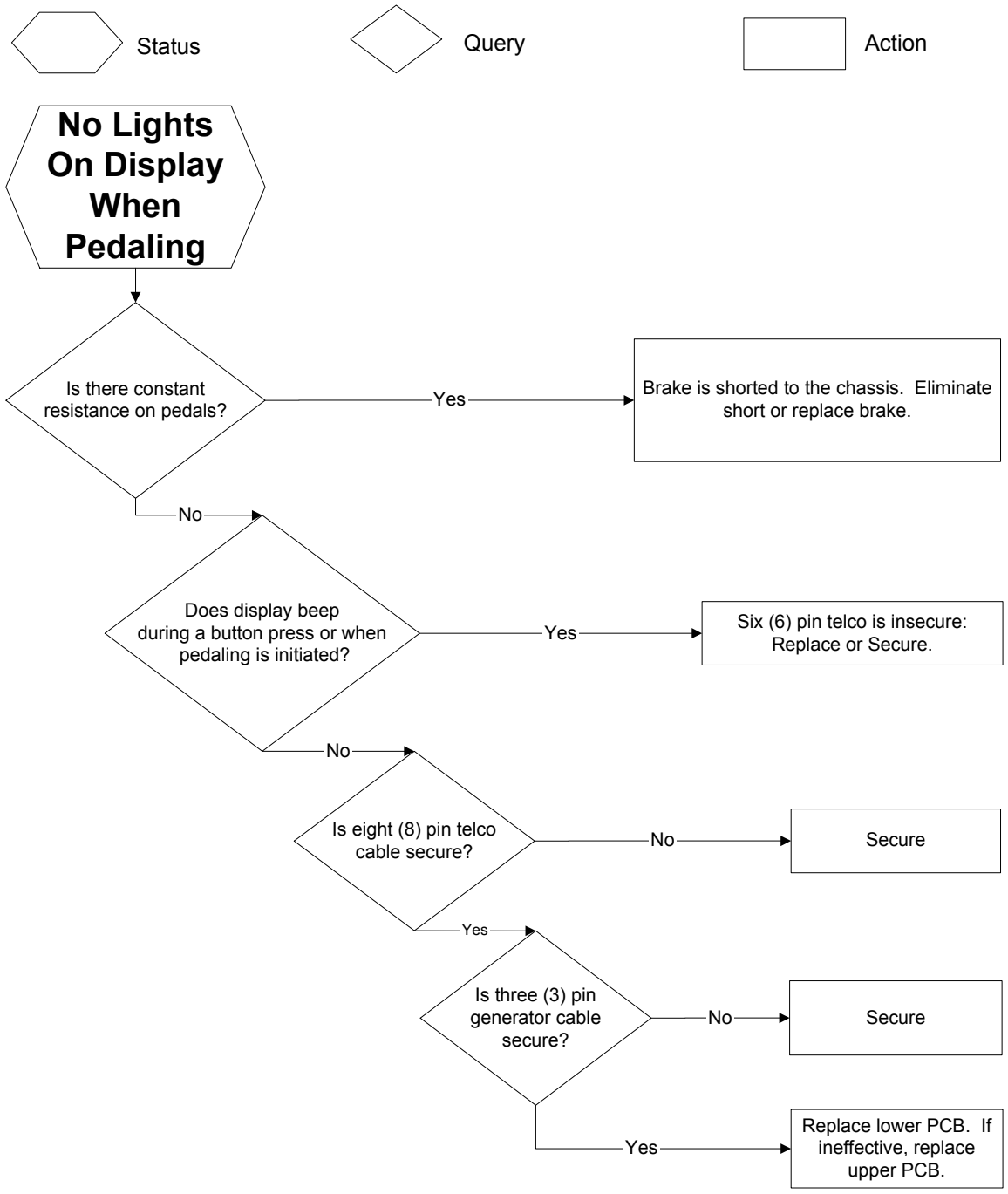
Problem	Possible Reasons	Solutions
Upper PCB is lit up but the values don't change.	Faulty upper PCB. Overlay and buttons on upper PCB not making contact.	Replace upper PCB. (P. 18-25) Secure overlay to upper PCB by tightening standoffs or Philips screws.
Machine shuts down in programs but works in manual mode.	Faulty upper PCB.	Replace upper PCB. (P. 18-25)
Can't select program or enter information and there is no beep when buttons are pressed.	Faulty upper PCB. Overlay and buttons on upper PCB not making contact.	Replace upper PCB. (P. 18-25) Secure overlay to upper PCB by tightening standoffs or Philips screws.
Constant resistance.	Faulty lower PCB.	Replace lower PCB. (P. 26-29)
Intermittent resistance or spiking.	Bad brake to lower PCB connection. Faulty lower PCB. Faulty upper PCB.	Fix connection. Replace lower PCB. (P. 26-29) Replace upper PCB. (P. 18-25)
Resistance is different than when you received unit.	Defined unit type has been changed. Faulty lower PCB.	Redefine unit type. Call SCIFIT for procedure. Replace lower PCB. (P. 26-29)
No resistance.	Bad brake to lower PCB connection. Faulty lower PCB. Faulty upper PCB.	See flowchart. (P. 14) See flowchart. (P. 14) See flowchart. (P. 14)
No heart rate displayed. (If using contact grips, see "No contact heart rate" below.)	No chest strap worn. Faulty chest strap. Wireless heart rate PCB not plugged in. Faulty wireless heart rate PCB. Faulty combo heart rate PCB, if equipped. Faulty upper PCB.	Must wear chest strap. Verify chest strap works. Check and fix wireless heart rate connection on back of upper PCB. Replace wireless heart rate PCB. (P. 31-36) Replace combo heart rate PCB. (P. 42-43) Replace upper PCB. (P. 18-25)

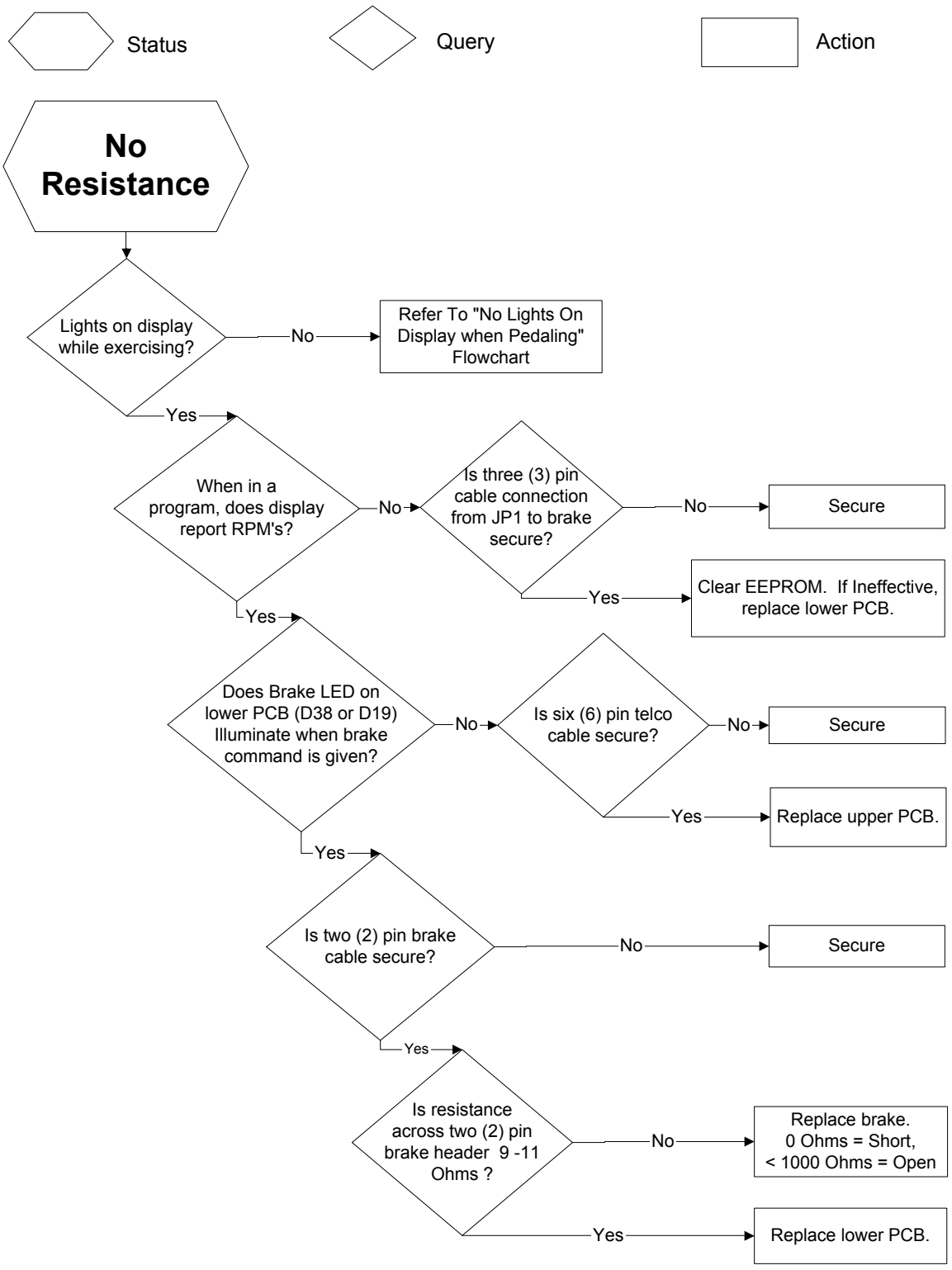
Electrical Troubleshooting (cont.)

Problem	Possible Reasons	Solutions
Heart rate displayed is very high.	Is picking up FM frequency from radio / transmitter.	Move radio or transmitter.
	Is picking up reading from another person's chest strap near the unit.	Make sure no one with a chest strap is standing next to your unit.
"---" then "No Heart Rate Detected" is displayed in top window while using Heart Rate Program.	No chest strap is worn.	Heart Rate program requires use of a chest strap. Contact grips do not work in this program.
	Faulty wireless heart rate PCB.	Replace wireless heart rate PCB. (P. 31-36)
	Faulty combo heart rate PCB, if equipped.	Replace combo heart rate PCB. (P. 42-43)
No contact heart rate displayed.	Both hands not being used.	Must hold onto both grips.
	Contact heart rate doesn't work on all users.	Verify w/ multiple users that there is no contact heart rate.
	Bad connection from contact heart rate PCB to upper PCB or to contact grips. (SXT)	Fix connection or replace ski pole cable. (P. 45-48)
	Faulty contact heart rate PCB.	Replace contact heart rate PCB. (P. 37-41)
	Faulty combo heart rate PCB, if equipped.	Replace combo heart rate PCB. (P. 42-43)
	Faulty upper PCB.	Replace upper PCB. (P. 18-25)
Contact heart rate very high or very low.	Faulty contact heart rate PCB.	Replace contact heart rate PCB. (P. 37-41)
	Faulty combo heart rate PCB, if equipped.	Replace combo heart rate PCB. (P. 42-43)
	Faulty upper PCB.	Replace upper PCB. (P. 18-25)

B. Troubleshooting Flowcharts

Although it is impossible to foresee every eventuality, the flowcharts on the following pages will cover the most common possibilities. If further assistance is required, please consult SCIFIT SYSTEMS, Inc.




Status
Query
Action
No Resistance
Lights on display while exercising?
No
Refer To "No Lights On Display when Pedaling" Flowchart
Yes
When in a program, does display report RPM's?
No
Is three (3) pin cable connection from JP1 to brake secure?
No
Secure
Yes
Clear EEPROM. If Ineffective, replace lower PCB.
Yes
Does Brake LED on lower PCB (D38 or D19) Illuminate when brake command is given?
No
Is six (6) pin telco cable secure?
No
Secure
Yes
Replace upper PCB.
Yes
Is two (2) pin brake cable secure?
No
Secure
Yes
Is resistance across two (2) pin brake header 9 -11 Ohms ?
No
Replace brake. 0 Ohms = Short, < 1000 Ohms = Open
Yes
Replace lower PCB.

C. User Setup (Use this procedure for all SX500's, SX1004's thru serial number 905-005170, SX7000's thru 911-005227, and SXT7000's thru 970-005361.)

User Setup provides club owners and managers with certain information about their equipment and enables them to customize certain features.

Provide power to the console by either plugging the wall pack into the machine and outlet or working out at a low level on the machine. Press and hold SCAN and ENTER for three (3) seconds to enter User Setup.

Press ENTER to move from one parameter to the next parameter.

1. Language: Toggles between English and German. Use the UP or DOWN keys to select the appropriate language.

2. Model: Displays the model of the machine that is set in the console. If the wrong model of machine is defined, the unit will not calculate resistance, watts, and distance correctly.

3. Version High: Displays the upper console's software version in the Time window.

4. Version Low: Displays the lower PCB firmware version in the Time window. If this version number is zero, no communication has been established between the upper and lower boards.

5. Unit of Measure: Toggles between metric and U.S. units of measure. Use the UP or DOWN keys to select the appropriate unit of measure.

6. Communications Mode: Toggles between Cardio Key and Csafe Comm. Use the UP or DOWN keys to select the appropriate communications mode.

7. Message: If a message has not been entered or is invalid, the upper display will show "**NO MESSAGE**". The TIME window will display the message screen number. The screen number range is ct1 through ct25. Each message screen has 10 characters so the total message can have up to 250 characters.

   To enter a message, use UP and DOWN to select the appropriate character. Characters available include the entire alphabet, numbers 0 through 9, punctuation, and a few other symbols. Press PAUSE to move the cursor to the right and START to shift the cursor to the left. To enter a blank space, press PAUSE without using the UP and DOWN keys to select a character. Press ENTER to save a message

and go to the next of the 25 screens. The only method of accessing previous screens is to enter the User Setup again and move through all the parameters. Pressing ENTER for any message that is empty or invalid will tell the system that message number is the ending message and the scrolling will stop with the previously set message. Pressing ENTER on the 25th screen, the program will advance to the next parameter (Hour Meter) since that is the end of the available memory.

To edit an existing message, access the appropriate screen by pressing ENTER. When at the appropriate screen, press PAUSE to move the cursor to the right and START to shift the cursor to the left. Use UP and DOWN to change the character. Press ENTER to save a message and go to the next screen. Pressing SCAN while editing a message will clear an existing message.

8. Hour Meter: Displays the elapsed run time in days, hours, and minutes. Days are shown on the upper display. Hours and minutes are shown in the TIME window.

   Press ENTER to exit User Setup.

D. User Setup (Use this procedure for SX1004's with serial numbers 905-005171 and above, SX7000's with serial numbers 911-005228 and above, and SXT7000's with serial numbers 970-005362 and above.)

User Setup provides club owners and managers with certain information about their equipment and enables them to customize certain features.

Provide power to the console by either plugging the wall pack into the machine and outlet or working out at a low level on the machine. Press and hold SCAN and ENTER for three (3) seconds to enter User Setup.

Press ENTER to move from one parameter to the next parameter.

1. Language: Toggles between English and German. Use the UP or DOWN keys to select the appropriate language.

2. Model: Displays the model of the machine that is set in the console. If the wrong model of machine is defined, the unit will not calculate resistance, watts, and distance correctly.

3. Version High: Displays the upper console's software version in the Time window.

4. Unit of Measure: Toggles between US Units and Metric. Use the UP or DOWN keys to select appropriate measure.

5. Message: If a message has not been entered or is invalid, the upper display will show "**NO MESSAGE**". The TIME window will display the message screen number. The screen number range is ct1 through ct25. Each message screen has 10 characters so the total message can have up to 250 characters.

   To enter a message, use UP and DOWN keys to select the appropriate character. Characters available include the entire alphabet, numbers 0 through 9, punctuation, and a few other symbols. Press PAUSE to move the cursor to the right and START to shift the cursor to the left. To enter a blank space, press PAUSE without using the UP and DOWN keys to select a character. Press ENTER to save a message and go to the next of the 25 screens. The only method of accessing previous screens is to enter the User Setup again and move through all the parameters. Pressing ENTER for any message that is empty or invalid will tell the system that message number is the ending message and the scrolling will stop with the previously set message. Pressing ENTER on the 25th screen, the program will advance to the next parameter (Hour Meter) since that is the end of the available memory.

   To edit an existing message, access the appropriate screen by pressing ENTER. When at the appropriate screen, press PAUSE to move the cursor to the right and START to shift the cursor to the left. Use UP and DOWN keys to change the next character. Press ENTER to save a message and go to the next screen. Pressing SCAN while editing a message will clear an existing message.

6. Hour Meter: Displays the elapsed run time in days, hours, and minutes. Days are shown on the upper display. Hours and minutes are shown in the TIME window.

7. Mets: Toggles between Mets On and Mets Off. Use the UP or DOWN keys to select the appropriate function.

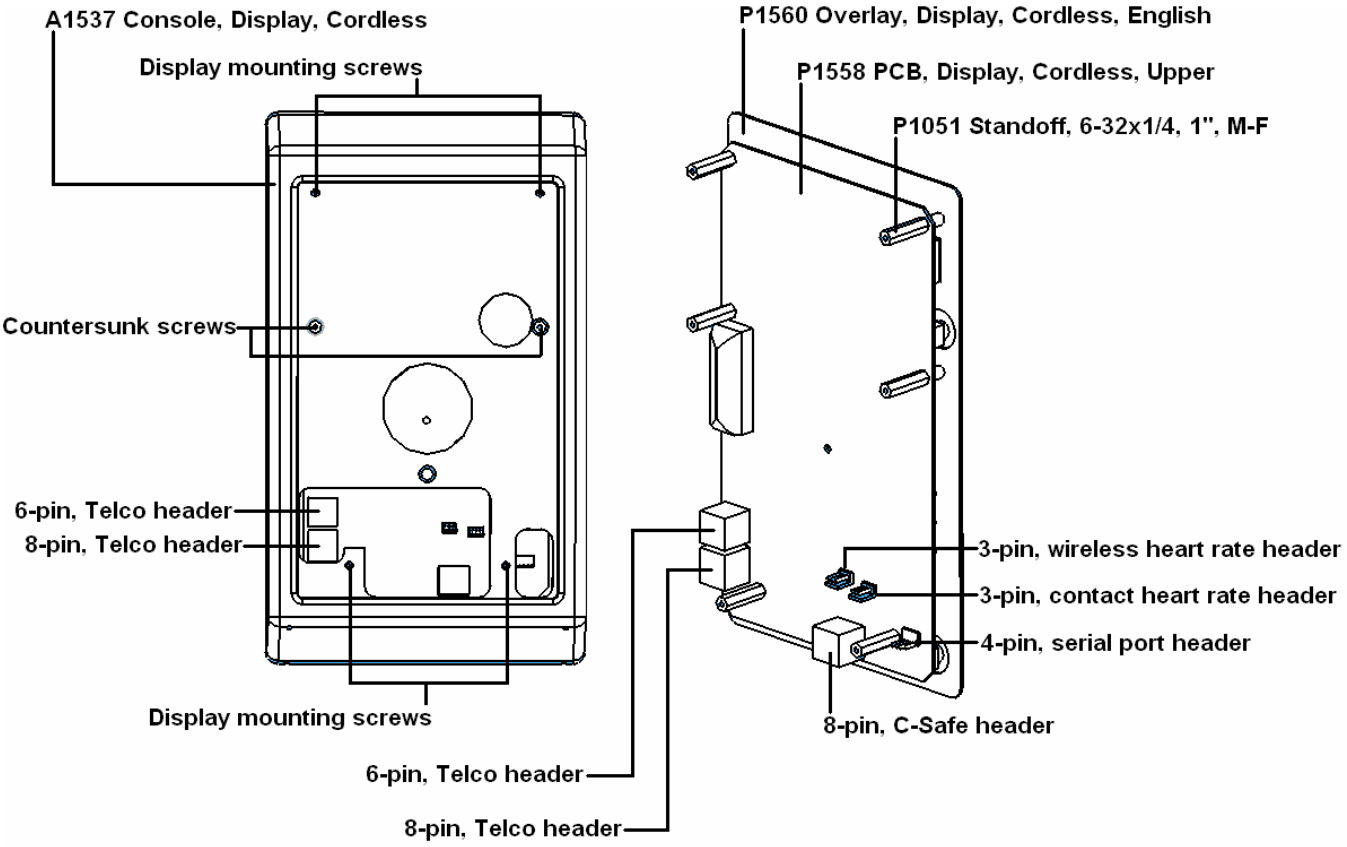
8. Watts Multiplier: Displays the variable at which watts are multiplied. This is only for certified ergometer calibration.

9. Key: Toggles between Key On and Key Off. With the key turned on, the machine will only work when a FITKEY is inserted. Use the UP or DOWN keys to select the appropriate function.

Press ENTER to update and exit User Setup.

V. Adjustments and Parts Replacement

A. Upper PCB (Display) Replacement (Use this procedure for all SX500's, SX1004's thru serial number 905-005170, SX7000's thru 911-005227, and SXT7000's thru 970-005361.)

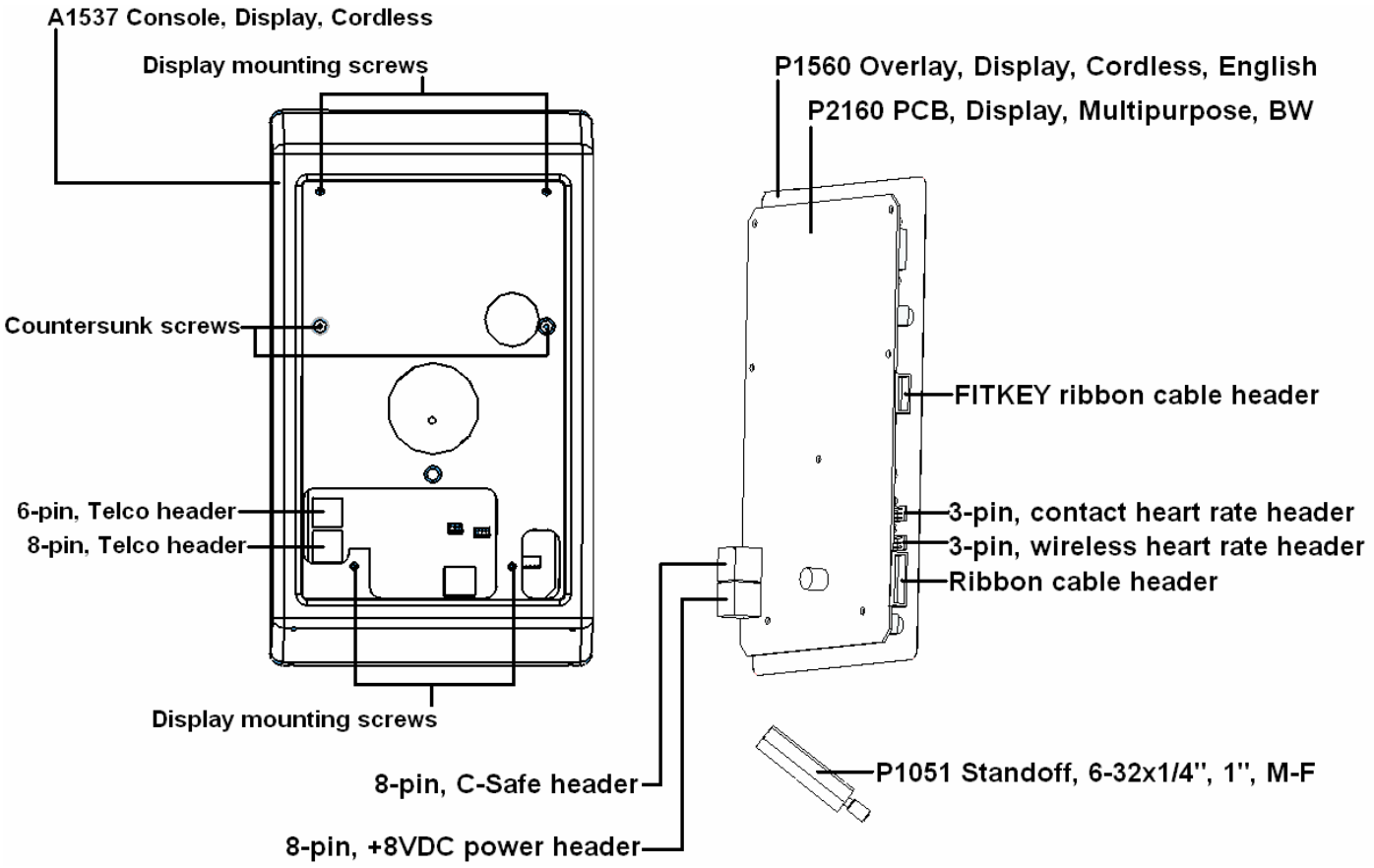


1. Using a Philips screwdriver, remove the four (4) display mounting screws on the back of the display mounting plate.
2. Disconnect all cables running to the upper PCB (P1558) and remove the upper console assembly from the unit. ***Make sure the cables do not fall into the neck of the unit.***
3. Remove the two (2) outer countersunk screws in the back of the plastic console, using a Philips screwdriver. This will free the upper PCB and overlay from the plastic console. ***Do not touch any components on the upper PCB. Touching components could cause static damage.*** If the wireless heart rate PCB is still plugged into the upper PCB, unplug it.
4. Remove the six (6) standoffs from the upper PCB. This may require the use of a 5/16" nut driver or socket. The upper PCB will separate from the overlay.
5. Install the new upper PCB and replace standoffs. If your unit had two (2) plastic standoffs, these need to be placed back at the bottom of the new upper PCB.

6. Plug the wireless heart rate PCB back into the upper PCB. It plugs into the centermost, 3-pin Molex header.
7. Reinsert the upper PCB assembly into the front of the console.
8. Reinstall the two (2) outer countersunk screws in the back of the plastic console.
9. Reconnect all cables to the upper PCB (as shown at the top of this procedure).
    - The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the outermost, 3-pin Molex header next to the wireless heart rate header.
    - When looking at the back of the upper PCB, the Telco cables plug in along the left edge. The 6-pin plugs into the top plug and the 8-pin plugs into the bottom plug.
    - If your unit has Cardio Key, the cable plugs into the serial port, which is the 4-pin Molex header lower right corner.
    - If your unit has Broadcast Vision, Cardio Theater, etc., the cable connects to the 8-pin header located at the bottom center of the upper PCB.
10. Place the display assembly back onto the mounting plate and install the four (4) display mounting screws.
11. The model of machine must be defined. (You must rotate the TeleRails or have the wall pack plugged in to power up the upper display to perform this next procedure.) When the display lights up, see if "**ELLIPTICAL**" appears in the top window. If so, press the ENTER to save. If no unit type appears in the top window upon power up, the display has probably been preset at the factory. To verify this, hold the SCAN, SELECT, and PAUSE for three (3) seconds until a type of machine appears, then release. ***Do not continue to hold keys once the type of unit appears.*** If "**ELLIPTICAL**" appears in the top window, press START to save and exit, unless the unit is equipped with Cardio Key. If "**ELLIPTICAL**" doesn't appear in the top window, press and hold SELECT and the UP or DOWN arrow until "**ELLIPTICAL**" does appears. For units with Cardio Key, when "**ELLIPTICAL**" appears, press ENTER sixteen times until the top window shows either "**C-SAFE COMM**" or "**CARDIO KEY**". If "**CARDIO KEY**" is displayed, press ENTER three times to exit the mode. If this screen shows "**C-SAFE COMM**", press the UP or DOWN arrow to display "**CARDIO KEY**" in the top window, then press ENTER three times to exit the mode.
12. Verify operations of the unit by using different programs.

B. Upper PCB (Display) Replacement

(Use this procedure for SX1004's with serial numbers 905-005171 thru 905-005182, SX7000's with serial numbers 911-005228 thru 911-005244, and SXT7000's with serial numbers 970-005362 thru 970-005401.)



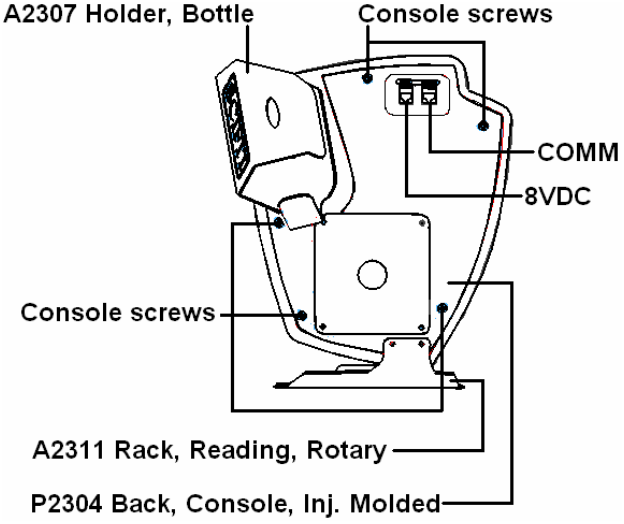
1. Using a Philips screwdriver, remove the four (4) display mounting screws on the back of the display mounting plate.
2. Disconnect all cables running to the upper PCB and remove the upper console assembly from the unit. ***Make sure the cables do not fall into the neck of the unit.***
3. Remove the two (2) outer countersunk screws in the back of the plastic console, using a Philips screwdriver. This will free the upper PCB and overlay from the plastic console. ***Do not touch any components on the upper PCB. Touching components could cause static damage.*** If the wireless heart rate PCB is still plugged into the upper PCB, unplug it.
4. Remove the six (6) standoffs from the upper PCB. This may require the use of a 5/16" nut driver or socket. The upper PCB will separate from the overlay.
5. Install the new upper PCB and replace standoffs.
6. Reconnect all cables to the upper PCB (as shown above).

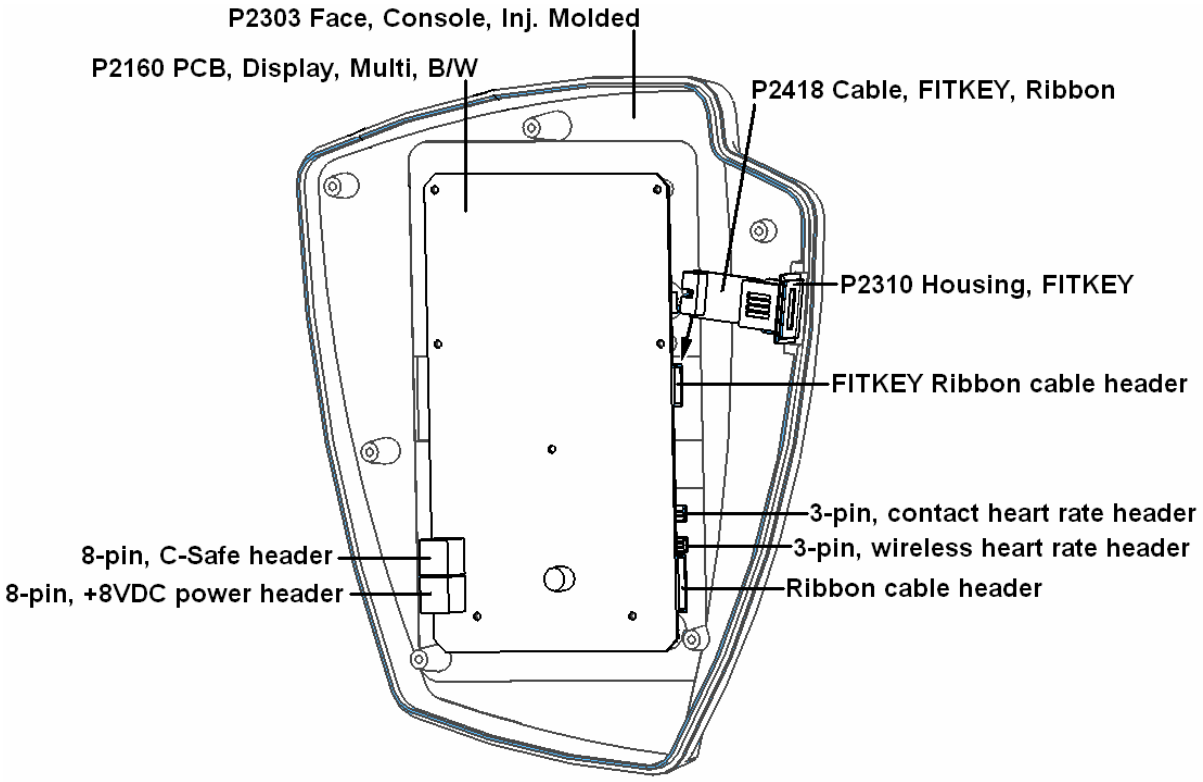
- Plug the wireless heart rate PCB back into the upper PCB. It plugs into the bottom 3-pin header on the right side of the upper PCB (as shown above).
- The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the top, 3-pin header on the right side of the upper PCB, above the wireless heart rate header.
- The ribbon cable plugs into the bottom ribbon cable header on the right side of the upper PCB.
- If your unit has Broadcast Vision, Cardio Theater, etc., the cable connects to the 8-pin, +8VDC power header. When looking at the upper PCB from the front, this header is located on the lower right backside corner of the upper PCB (as shown above).

7. Reinsert the upper PCB assembly into the front of the console.
8. Reinstall the two (2) outer countersunk screws in the back of the plastic console.
9. Place the display assembly back onto the mounting plate and install the four (4) display mounting screws.
10. The model of machine must be defined. (You must rotate the TeleRails or have the wall pack plugged in to power up the upper display to perform this next procedure.) When the display lights up, see if **"UNDEFINED"** appears in the top window. If so, use the UP arrow until the correct setting is displayed for your unit. The correct setting for your unit is **"ELLIPTICAL"** for early software versions, **"SX"** or **"SX1000"** for versions with fixed pedals, **"SX"** or **"SX7000"** for BioFlex pedals, or **"SXT"** or **"SXT7000"** for all-body ellipticals. If no unit type appears in the top window upon power up, the display has probably been preset at the factory. To verify this, hold the SCAN, SELECT, and PAUSE for three seconds until **"FACTORY SETTINGS"** appears, then release. ***Do not continue to hold keys once this appears.*** Press ENTER once. If the correct unit type appears in the top window, press ENTER eight (8) times until **"UPDATING"** appears. If the correct unit type doesn't appear in the top window, press and hold SELECT and the UP or DOWN arrow simultaneously until the correct unit type does appears.
11. Verify operations of the unit by using different programs.

C. Upper PCB (Display) Replacement

(Use this procedure for SX1004's with serial numbers 905-005183 thru 905-005199, SX7000's with serial numbers 911-005245 thru 911-005273, and SXT7000's with serial numbers 970-005402 thru 970-005556.)

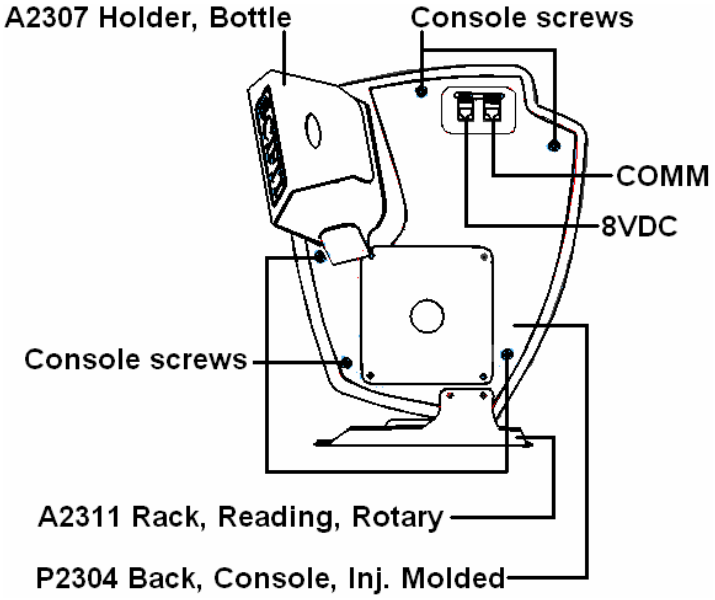


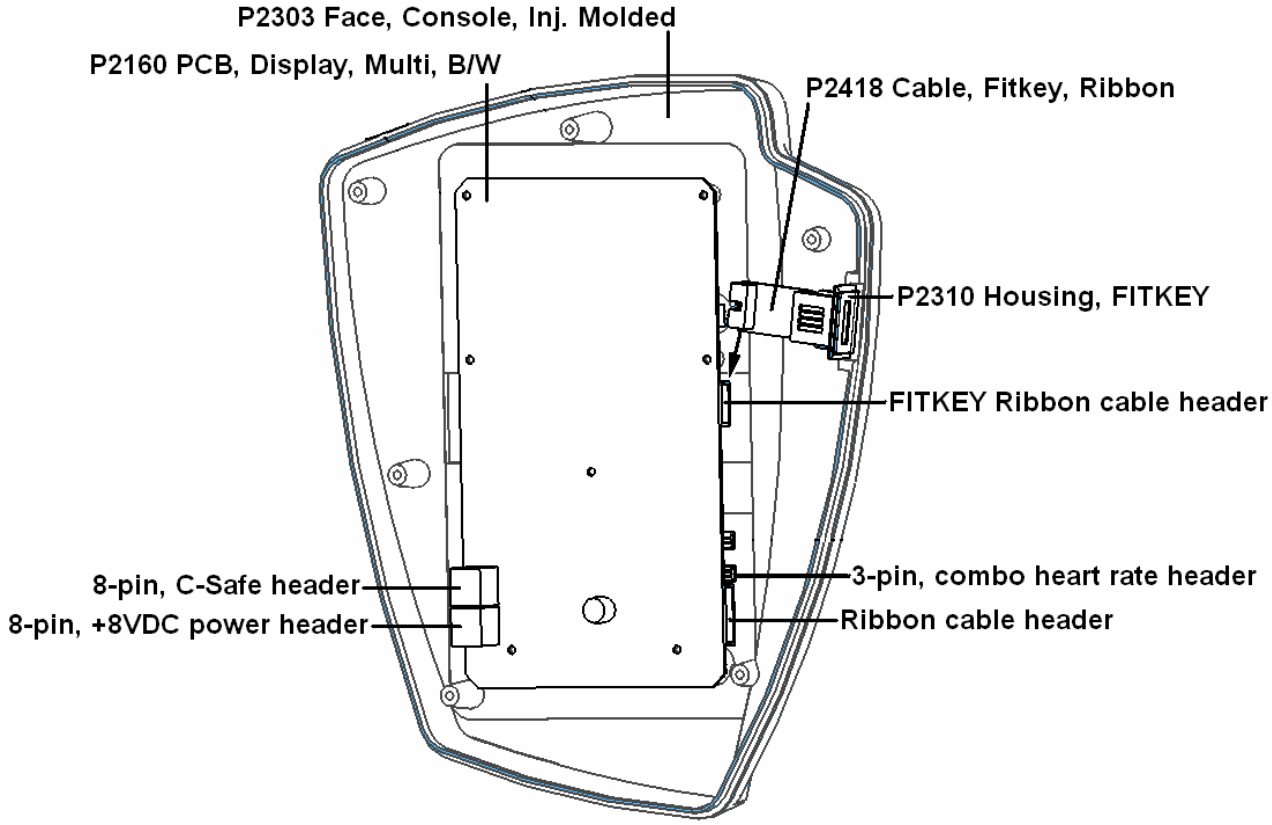

P2303 Face, Console, Inj. Molded
P2160 PCB, Display, Multi, B/W
P2418 Cable, FITKEY, Ribbon
P2310 Housing, FITKEY
FITKEY Ribbon cable header
3-pin, contact heart rate header
3-pin, wireless heart rate header
Ribbon cable header
8-pin, C-Safe header
8-pin, +8VDC power header

1. Remove the five (5) console screws in the console back (P2304), using a Philips screwdriver.
2. Disconnect all cables running to the upper PCB (P2160) and remove console face (P2303) from the unit. ***Make sure the cables do not fall into the neck of the unit.***

3. Remove the six (6) screws holding the upper PCB to the console face. This will free the upper PCB and overlay from the plastic console. ***Do not touch any components on the upper PCB. Touching components could cause static damage.***
4. Install the new upper PCB.
5. Reinsert the six (6) screws through the upper PCB and into the console face. Tighten.
6. Reconnect all cables to the upper PCB (as shown at the top of this procedure).
    - Plug the wireless heart rate PCB back into the upper PCB. It plugs into the bottom 3-pin header on the right side of the upper PCB (as shown in the drawing).
    - The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the top, 3-pin header on the right side of the upper PCB, above the wireless heart rate header (as shown in the drawing).
    - The ribbon cable plugs into the bottom ribbon cable header on the right side of the upper PCB (as shown in the drawing).
    - The FITKEY ribbon cable (P2418) plugs into the FITKEY ribbon cable header on the upper PCB. This header is located just above the contact heart rate header (as shown in the drawing).
    - There are two (2) gray Telco cables. The cable from the 8VDC jack affixed to the console back connects to the 8-pin, +8VDC power header on the upper PCB. The other cable from the COMM jack affixed to the console back connects to the 8-pin, C-Safe communications header.
7. Verify connections.
8. Match the console and face up to each other and install the five (5) console screws, using a Philips screwdriver.
9. The model of machine must be defined. (You must rotate the TeleRails or have the wall pack plugged in to power up the upper display to perform this next procedure.) When the display lights up, see if **"UNDEFINED"** appears in the top window. If so, use the UP arrow until the correct setting is displayed for your unit. The correct setting for your unit is **"ELLIPTICAL"** for early software versions, **"SX"** or **"SX1000"** for versions with fixed pedals, **"SX"** or **"SX7000"** for BioFlex pedals, or **"SXT"** or **"SXT7000"** for all-body ellipticals. If no unit type appears in the top window upon power up, the display has probably been preset at the factory. To verify this, hold the SCAN, SELECT, and PAUSE for three seconds until **"FACTORY SETTINGS"** appears, then release. ***Do not continue to hold keys once this appears.*** Press ENTER once. If the correct unit type appears in the top window, press ENTER eight (8) times until **"UPDATING"** appears. If the correct unit type doesn't appear in the top window, press and hold SELECT and the UP or DOWN arrow simultaneously until the correct unit type does appears.
10. Verify operations of the unit by using different programs.

D. Upper PCB (Display) Replacement (Use this procedure for SX1004's with serial numbers 905-005200 and above, SX7000's with serial numbers 911-005274 and above, and SXT7000's with serial numbers 970-005557 and above.)

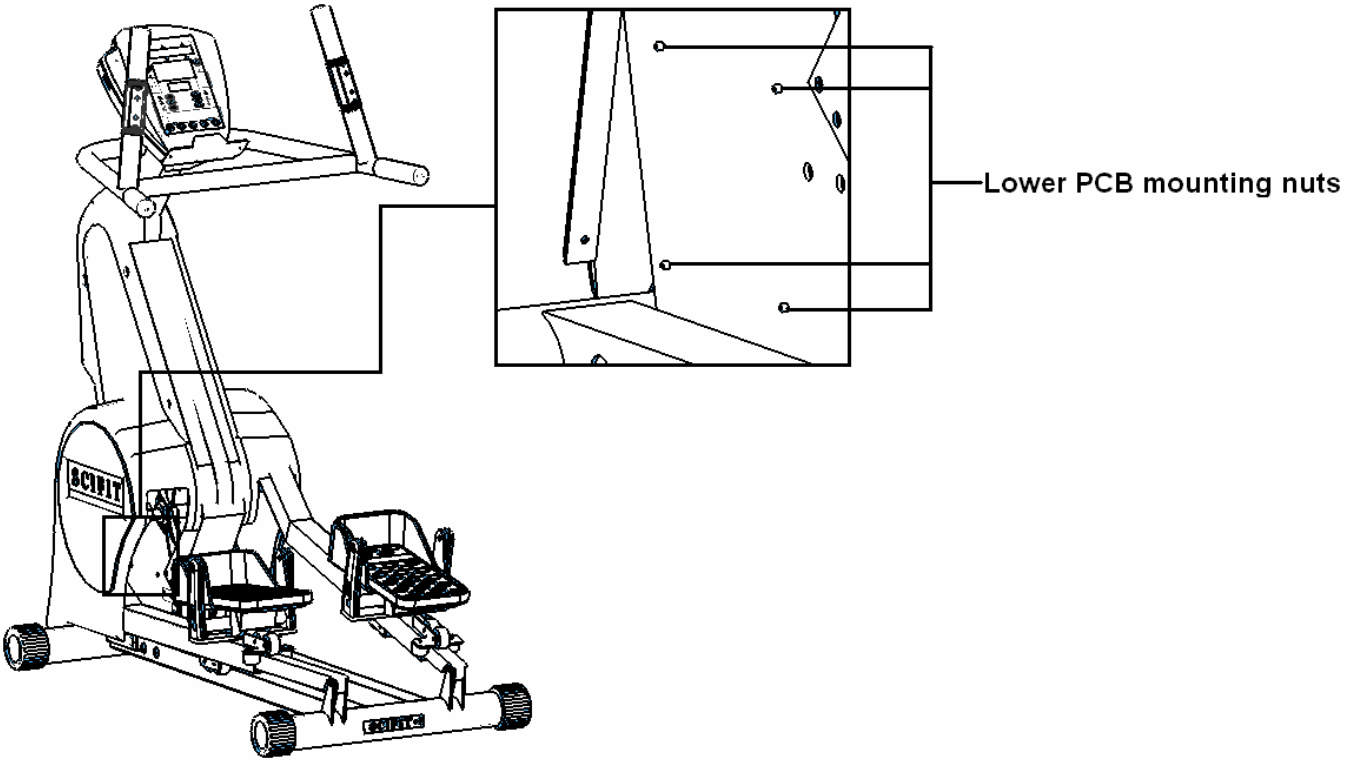



P2303 Face, Console, Inj. Molded
P2160 PCB, Display, Multi, B/W
P2418 Cable, Fitkey, Ribbon
P2310 Housing, FITKEY
FITKEY Ribbon cable header
8-pin, C-Safe header
8-pin, +8VDC power header
3-pin, combo heart rate header
Ribbon cable header

1. Remove the five (5) console screws in the console back (P2304), using a Philips screwdriver.

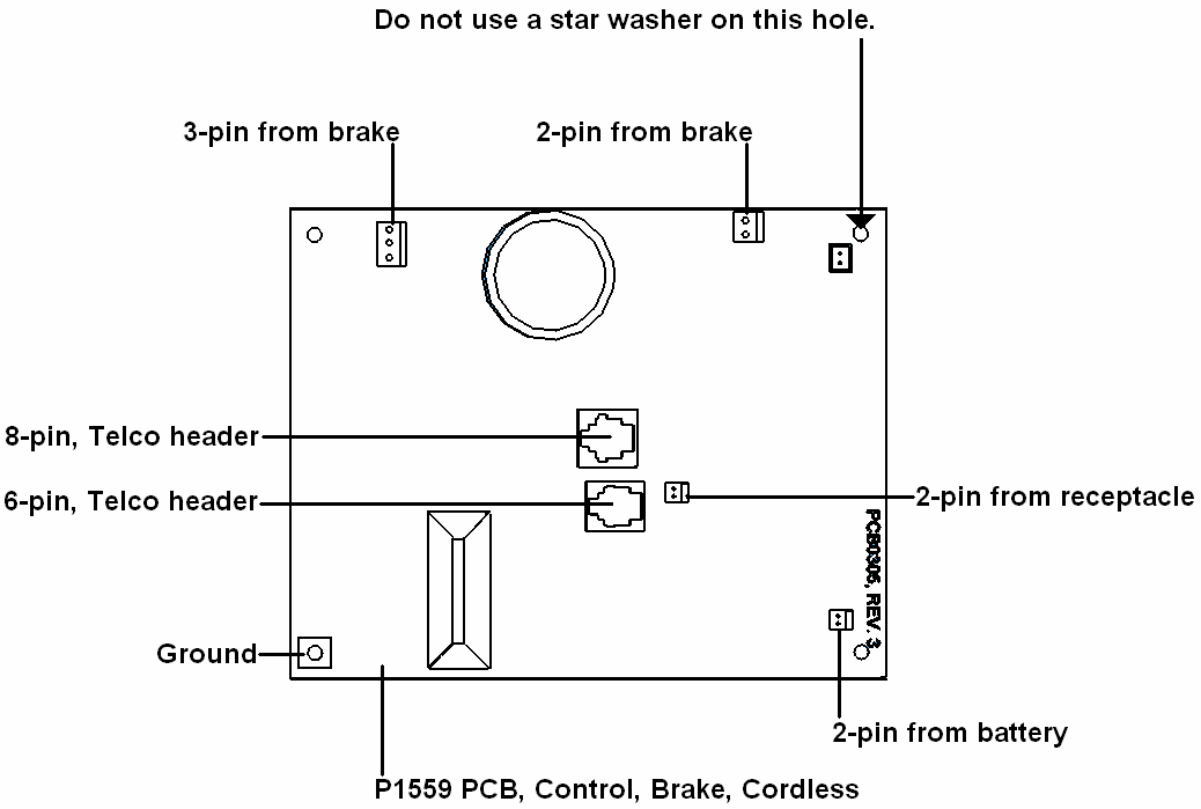
2. Disconnect all cables running to the upper PCB (P2160) and remove console face (P2303) from the unit. ***Make sure the cables do not fall into the neck of the unit.***
3. Remove the six (6) screws holding the upper PCB to the console face. This will free the upper PCB and overlay from the plastic console. ***Do not touch any components on the upper PCB. Touching components could cause static damage.***
4. Install the new upper PCB.
5. Reinsert the six (6) screws through the upper PCB and into the console face. Tighten.
6. Reconnect all cables to the upper PCB.
    - Plug the combo heart rate PCB back into the upper PCB. It plugs into the bottom 3-pin header on the right side of the upper PCB (as shown as wireless heart rate header in the drawing).
    - The ribbon cable plugs into the bottom ribbon cable header on the right side of the upper PCB (as shown in the drawing).
    - The FITKEY ribbon cable (P2418) plugs into the FITKEY ribbon cable header on the upper PCB. This header is located just above the contact heart rate header (as shown in the drawing).
    - There are two (2) gray Telco cables. The cable from the 8VDC jack affixed to the console back connects to the 8-pin, +8VDC power header on the upper PCB. The other cable from the COMM jack affixed to the console back connects to the 8-pin, C-Safe header.
7. Verify connections.
8. Match the console and face up to each other and install the five (5) console screws, using a Philips screwdriver.
9. The model of machine must be defined. (You must rotate the TeleRails or have the wall pack plugged in to power up the upper display to perform this next procedure.) When the display lights up, see if **"UNDEFINED"** appears in the top window. If so, use the UP arrow until the correct setting is displayed for your unit. The correct setting for your unit is **"ELLIPTICAL"** for early software versions, **"SX"** or **"SX1000"** for versions with fixed pedals, **"SX"** or **"SX7000"** for BioFlex pedals, or **"SXT"** or **"SXT7000"** for all-body ellipticals. If no unit type appears in the top window upon power up, the display has probably been preset at the factory. To verify this, hold the SCAN, SELECT, and PAUSE for three seconds until **"FACTORY SETTINGS"** appears, then release. ***Do not continue to hold keys once this appears.*** Press ENTER once. If the correct unit type appears in the top window, press ENTER eight (8) times until **"UPDATING"** appears. If the correct unit type doesn't appear in the top window, press and hold SELECT and the UP or DOWN arrow simultaneously until the correct unit type does appears.
10. Verify operations of the unit by using different programs.

E. Lower PCB (Power Supply) Replacement (Use this procedure for all SX500's, SX1004's thru serial number 905-005170, SX7000's thru 911-005227, and SXT7000's thru 970-005361.)



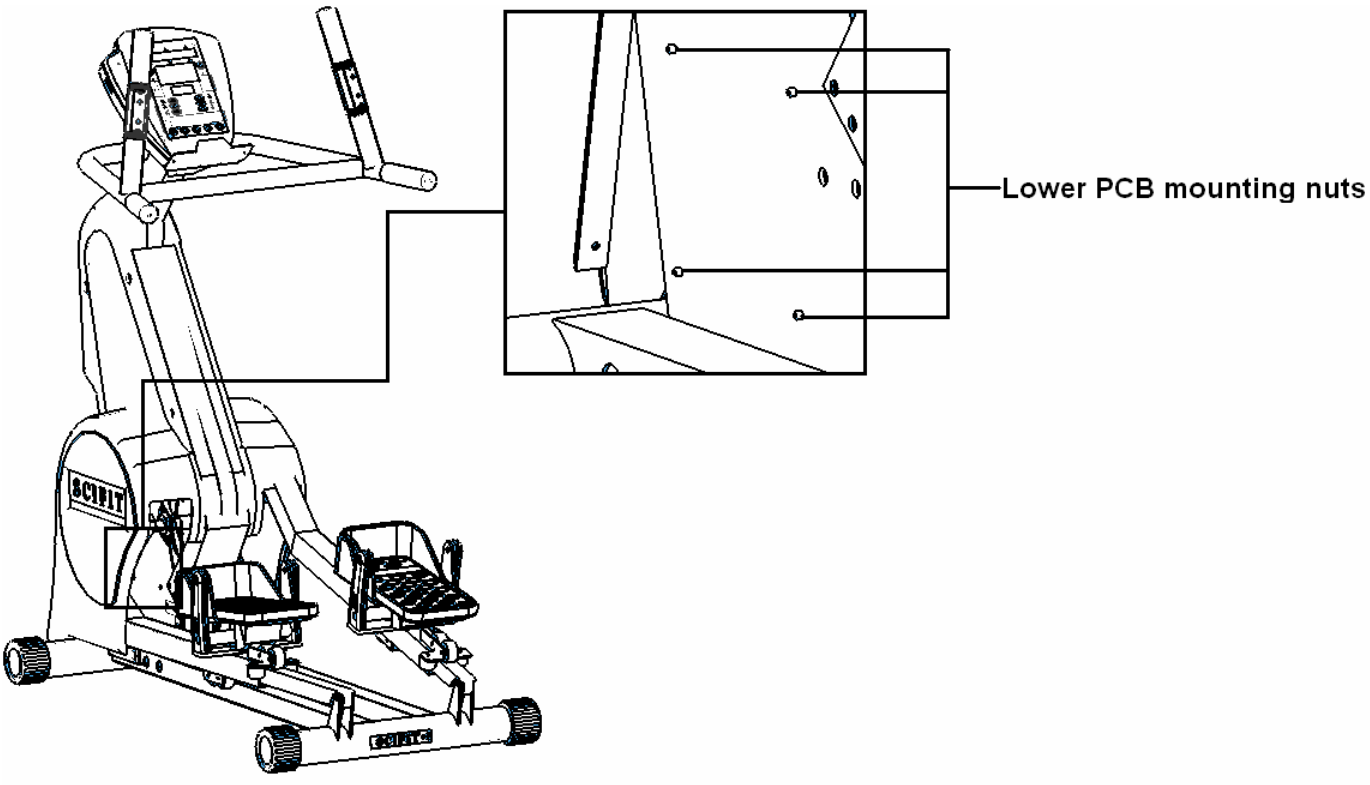
1. Remove the four (4) lower PCB mounting nuts, located on the left side of the monocoque (silver framework), using a 5/16" socket or wrench. ***The covers do not need to be removed from the unit.***
2. Lay the unit over on its left side.
3. Lift the lower PCB (P1559) up slightly and pull out the bottom of the unit. One (1) zip-tie may need to be cut to give the wires enough slack to remove the lower PCB from the bottom of the unit. ***Make sure you are grounded when handling electronics. Do not touch any components on the lower PCB. Static damage can occur.***
4. Disconnect all wires running to the lower PCB.
5. Using a Philips screwdriver, transfer the standoffs from the old lower PCB to the new lower PCB. To remove a standoff, unscrew the Philips screw and star washer running through each corner of the lower PCB. One (1) screw doesn't have a star washer. When putting the standoffs on the new lower PCB, it is important to install star washers on the same three (3) holes as the old PCB. Refer to lower PCB picture on the next page to confirm. ***Warning: Installing a star washer on the hole that is not supposed to get one will short out the lower PCB.***

6. Reconnect all wires to the lower PCB. Confirm connections with the lower PCB picture below.

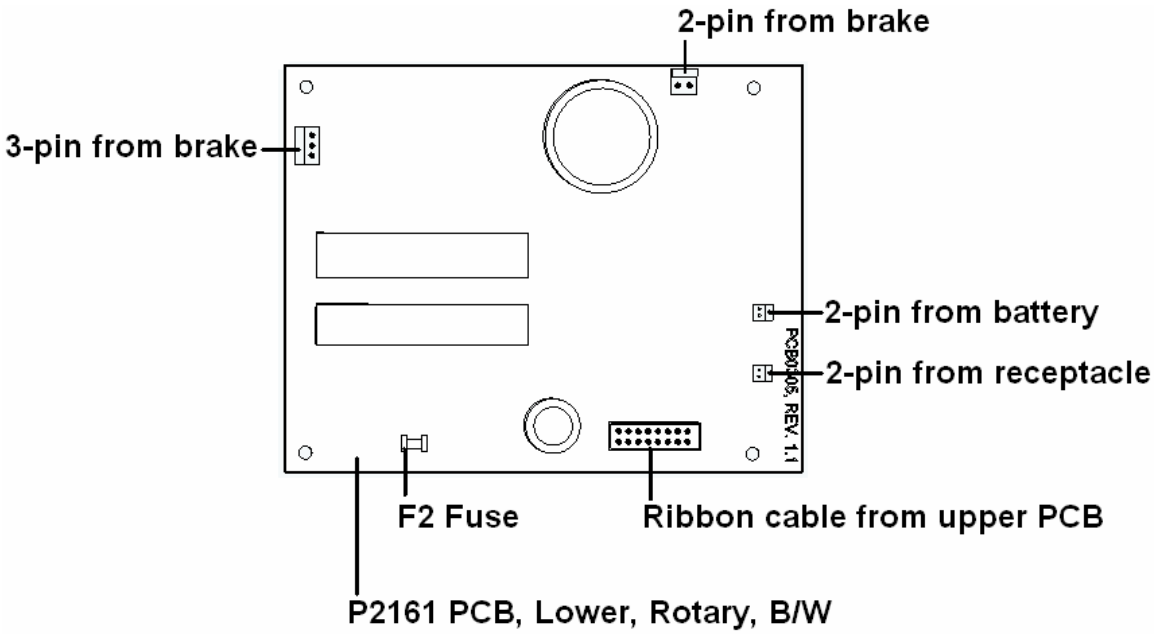


7. Install lower PCB back inside unit. Push the threaded ends of the standoffs through the mounting holes. Attach mounting nuts to each standoff and tighten.
8. Verify all connections on the lower PCB are secure.
9. Return unit to the upright position.
10. Rotate TeleRails to see if the upper display lights up. If display lights up, do an operations test. Use different programs to verify unit is working correctly.

F. Lower PCB (Power Supply) Replacement (Use this procedure for all SX500's, SX1004's with serial numbers 905-005171 and above, SX7000's 911-005228 and above, and SXT7000's 970-005362 and above.)

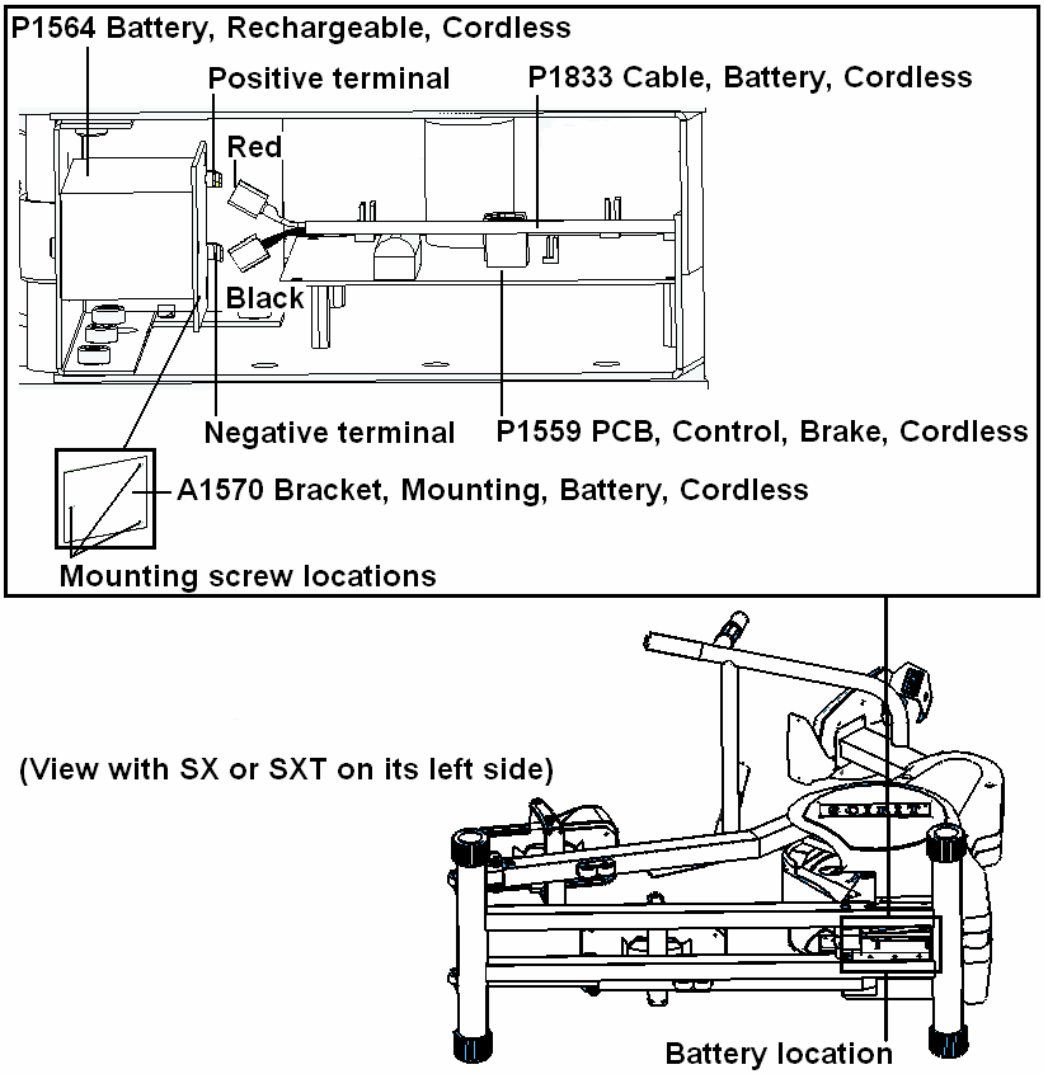


1. Remove the four (4) lower PCB mounting nuts, located on the left side of the monocoque (silver framework), using a 5/16" socket or wrench. ***The covers do not need to be removed from the unit.***
2. Lay the unit over on its left side.
3. Lift the lower PCB (P2161) up slightly and pull out the bottom of the unit. One (1) zip-tie may need to be cut to give the wires enough slack to remove the lower PCB from the bottom of the unit. ***Make sure you are grounded when handling electronics. Do not touch any components on the lower PCB. Static damage can occur.***
4. Disconnect all wires running to the lower PCB.
5. Using a Philips screwdriver, transfer the standoffs from the old lower PCB to the new lower PCB. To remove a standoff, unscrew the Philips screw and star washer running through each corner of the lower PCB.
6. Reconnect all wires to the lower PCB. Confirm connections with the lower PCB picture on the next page.



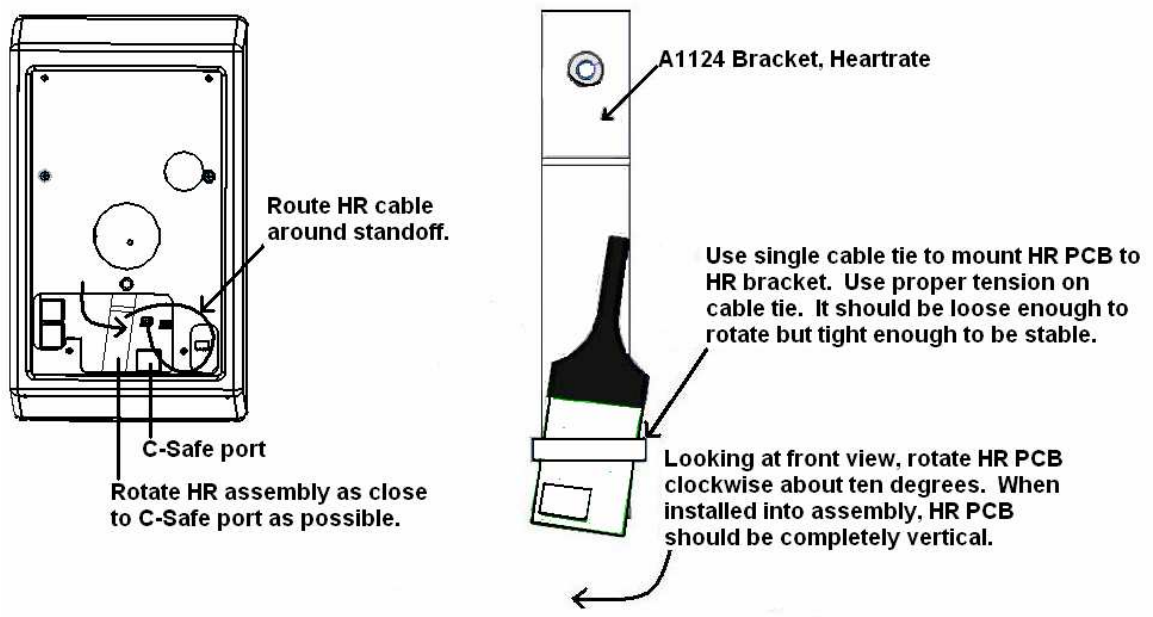
7. Install lower PCB back inside unit. Push the threaded ends of the standoffs through the mounting holes. Attach mounting nuts to each standoff and tighten.
8. Verify all connections on the lower PCB are secure.
9. Return unit to the upright position.
10. Rotate the TeleRails to see if the upper display lights up. If display lights up, do an operations test. Use different programs to verify unit is working correctly.

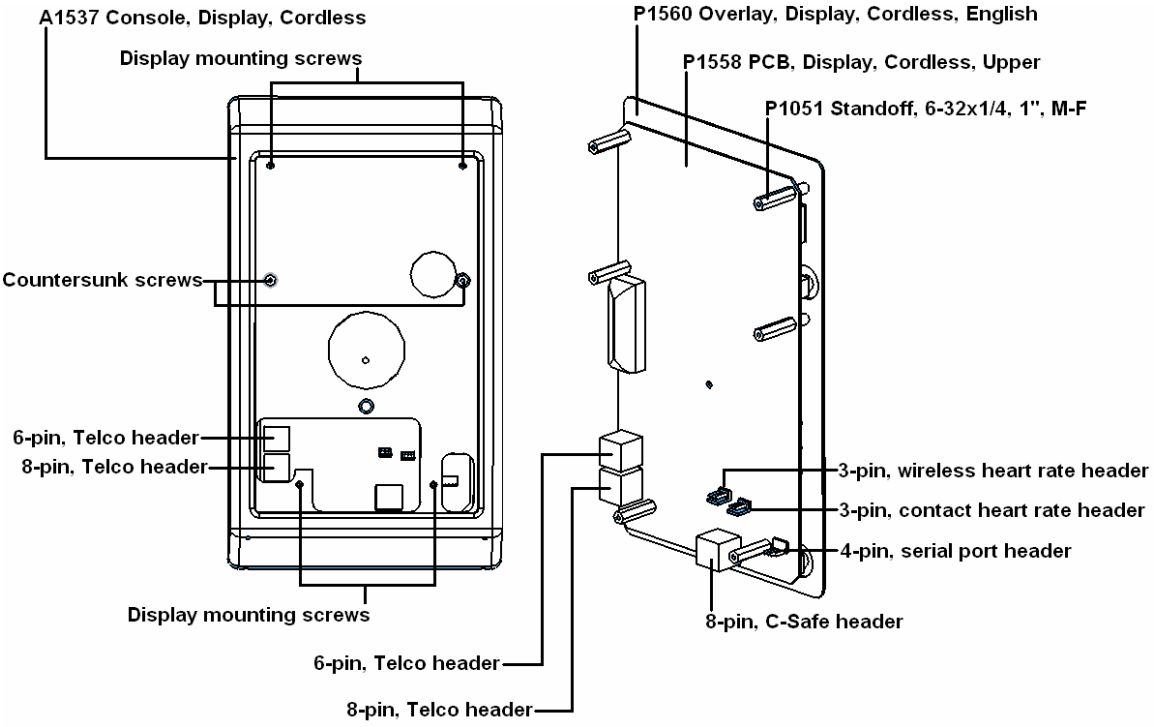
G. Battery Replacement



1. Lay the unit on its left side and locate the battery.
2. Remove the bottom Philips screw running through the battery mounting bracket (A1570), then loosen the top two (2) Philips screws.
3. Pull the battery out the bottom of the unit.
4. Disconnect the two (2) wires connected to the battery.
5. Connect the two (2) wires to the new battery. The red wire connects to the positive terminal while the black wire connects to the negative terminal.
6. Install new battery.
7. Install the battery mounting bracket back into place.
8. Insert the three (3) screws through the battery mounting bracket and tighten down.
9. Verify connections and stand the unit upright.
10. Test unit operations.

H. Wireless Heart Rate PCB Replacement (Use this procedure for all SX500's, SX1004's thru serial number 905-005170, SX7000's thru 911-005227, and SXT7000's thru 970-005361.)

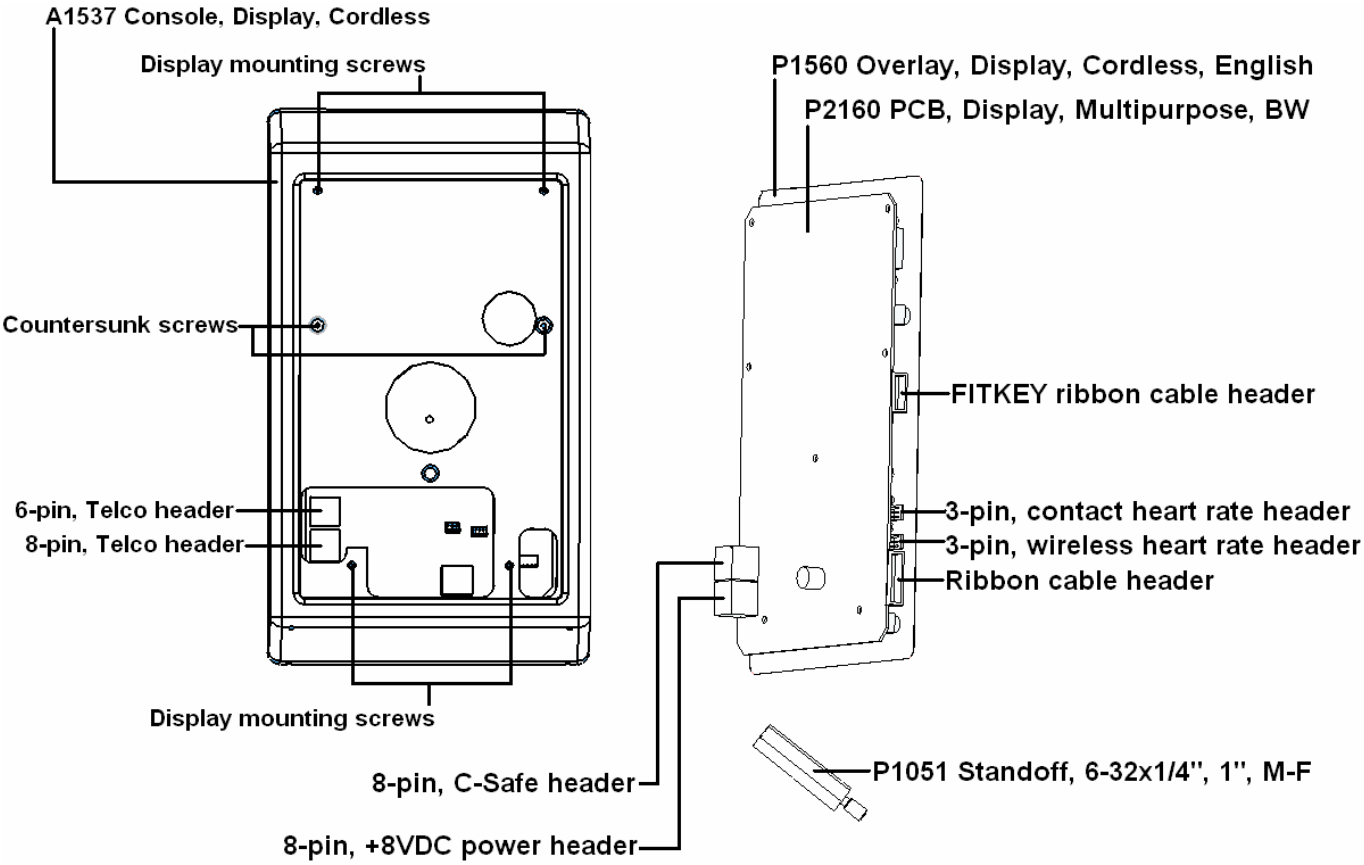

Route HR cable around standoff.
C-Safe port
Rotate HR assembly as close to C-Safe port as possible.
A1124 Bracket, Heartrate
Use single cable tie to mount HR PCB to HR bracket. Use proper tension on cable tie. It should be loose enough to rotate but tight enough to be stable.
Looking at front view, rotate HR PCB clockwise about ten degrees. When installed into assembly, HR PCB should be completely vertical.

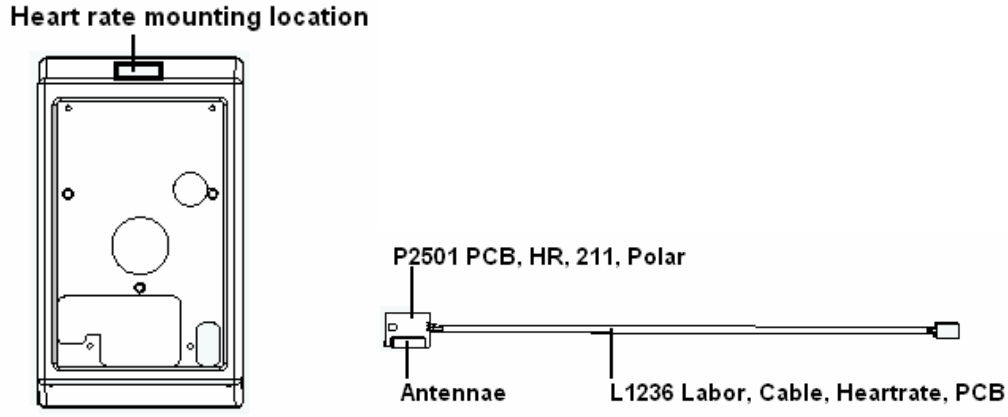


1. Using a Philips screwdriver, remove the four (4) display mounting screws on the back of the display mounting plate.

2. Disconnect all cables running to the upper PCB and remove the upper console assembly from the unit. ***Make sure the cables do not fall into the neck of the unit.***
3. Remove the two (2) outer countersunk screws in the back of the plastic console using a Philips screwdriver. This will free the upper PCB and overlay from the plastic console. ***Do not touch any components on the PCB. Touching components could cause static damage.*** If the wireless heart rate PCB is still plugged into the upper PCB, unplug it.
4. Using a Philips screwdriver, remove the center, countersunk screw that mounts the heart rate bracket (A1124).
5. Cut the zip-tie holding the wireless heart rate PCB to the bracket.
6. Mount the new wireless heart rate PCB onto the bracket, using a zip-tie (as shown in the picture at the top of the page).
7. Reinstall the wireless heart rate assembly back into the console but do not tighten screw all the way down. When looking at the console from the front, rotate the wireless heart rate PCB clockwise about ten (10) degrees. When properly installed, the wireless heart rate PCB should be completely vertical. Tighten the screw to lock in place.
8. Reinstall the upper display assembly. When looking at the console assembly from the backside, loop the wireless heart rate cable around the lower right standoff. Plug the wireless heart rate PCB back into the upper PCB. It plugs into the centermost, 3-pin Molex header.
9. Reinstall the two (2) outer countersunk screws in the back of the plastic console.
10. Reconnect all cables to the upper PCB (as shown at the top of this procedure).
    - The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the outermost, 3-pin Molex header next to the wireless heart rate header.
    - When looking at the back of the upper PCB, the Telco cables plug in along the left edge. The 6-pin plugs into the top jack and the 8-pin plugs into the bottom jack.
    - If your unit has Cardio Key, the cable plugs into the serial port, which is the 4-pin Molex header lower right corner.
    - If your unit has Broadcast Vision, Cardio Theater, etc., the cable connects to the 8-pin header located at the bottom center of the upper PCB.
11. Place the display assembly back onto the mounting plate and install the four (4) display mounting screws.

I. Wireless Heart Rate PCB Replacement (Use this procedure for SX1004's with serial numbers 905-005171 thru 905-005182, SX7000's with serial numbers 911-005228 thru 911-005244, and SXT7000's with serial numbers 970-005362 thru 970-005401.)

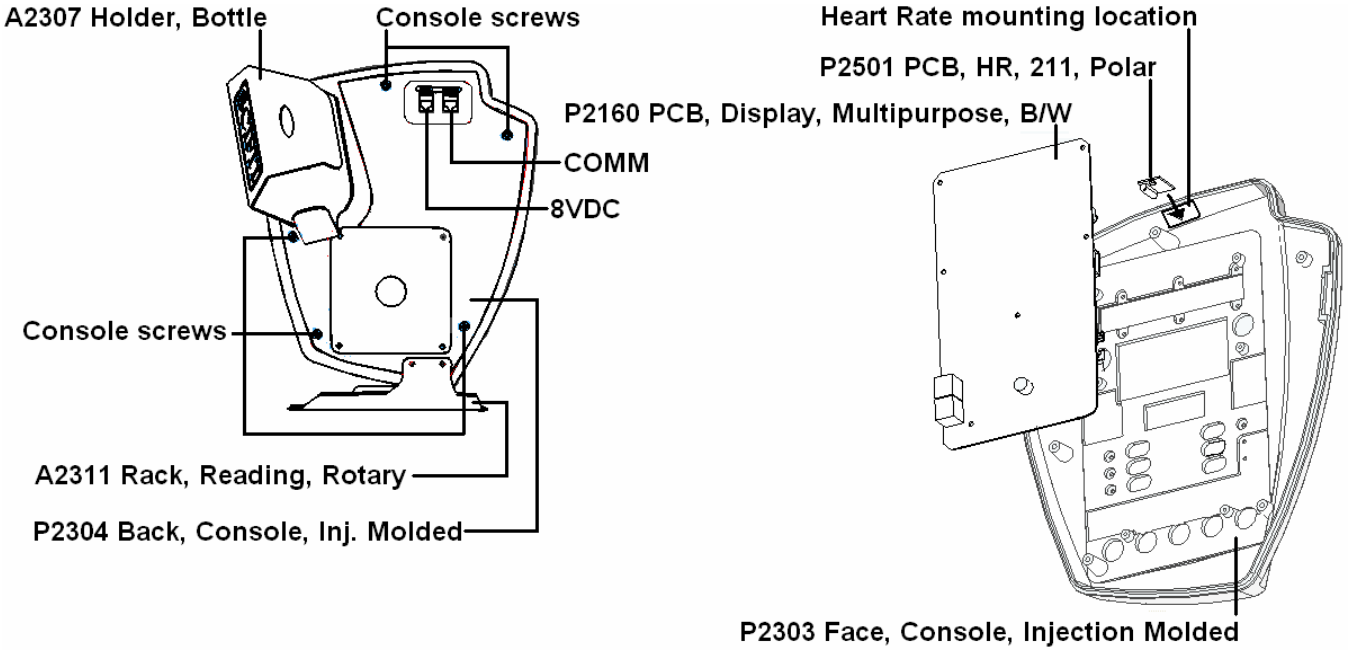


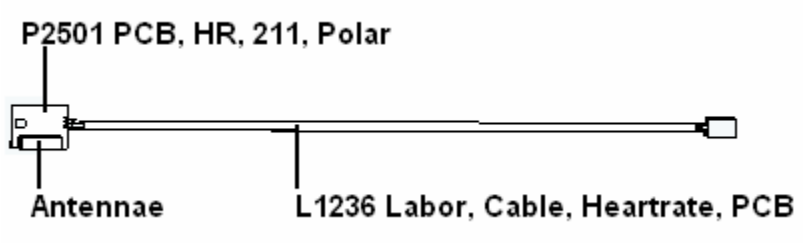


1. Using a Philips screwdriver, remove the four (4) display mounting screws on the back of the display mounting plate.

2. Disconnect all cables running to the upper PCB (P2160) and remove the upper console assembly from the unit. ***Make sure the cables do not fall into the neck of the unit.***
3. Remove the two (2) outer countersunk screws in the back of the plastic console, using a Philips screwdriver. This will free the upper PCB and overlay (P1560) from the plastic console. ***Do not touch any components on the upper PCB. Touching components could cause static damage.*** If the wireless heart rate PCB (P2501) is still plugged into the upper PCB, unplug it.
4. Locate the wireless heart rate PCB mounting location.
5. Peel the old wireless heart rate PCB from the console.
6. Clean the wireless heart rate PCB mounting location.
7. Apply adhesive to the back of the wireless heart rate PCB.
8. Mount the wireless heart rate PCB.
9. Reconnect all cables to the upper PCB (as shown at the top of this procedure).
    - Plug the wireless heart rate PCB back into the upper PCB. It plugs into the bottom 3-pin header on the right side of the upper PCB (as shown above).
    - The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the top, 3-pin header on the right side of the upper PCB, above the wireless heart rate header.
    - The ribbon cable plugs into the bottom ribbon cable header on the right side of the upper PCB.
    - If your unit has Broadcast Vision, Cardio Theater, etc., the cable connects to the 8-pin, +8VDC power header. When looking at the upper PCB from the front, this header is located on the lower right backside corner of the upper PCB (as shown above).
10. Reinsert the upper PCB assembly into the front of the console.
11. Reinstall the two (2) outer countersunk screws in the back of the plastic console.
12. Place the display assembly back onto the mounting plate and install the four (4) display mounting screws.

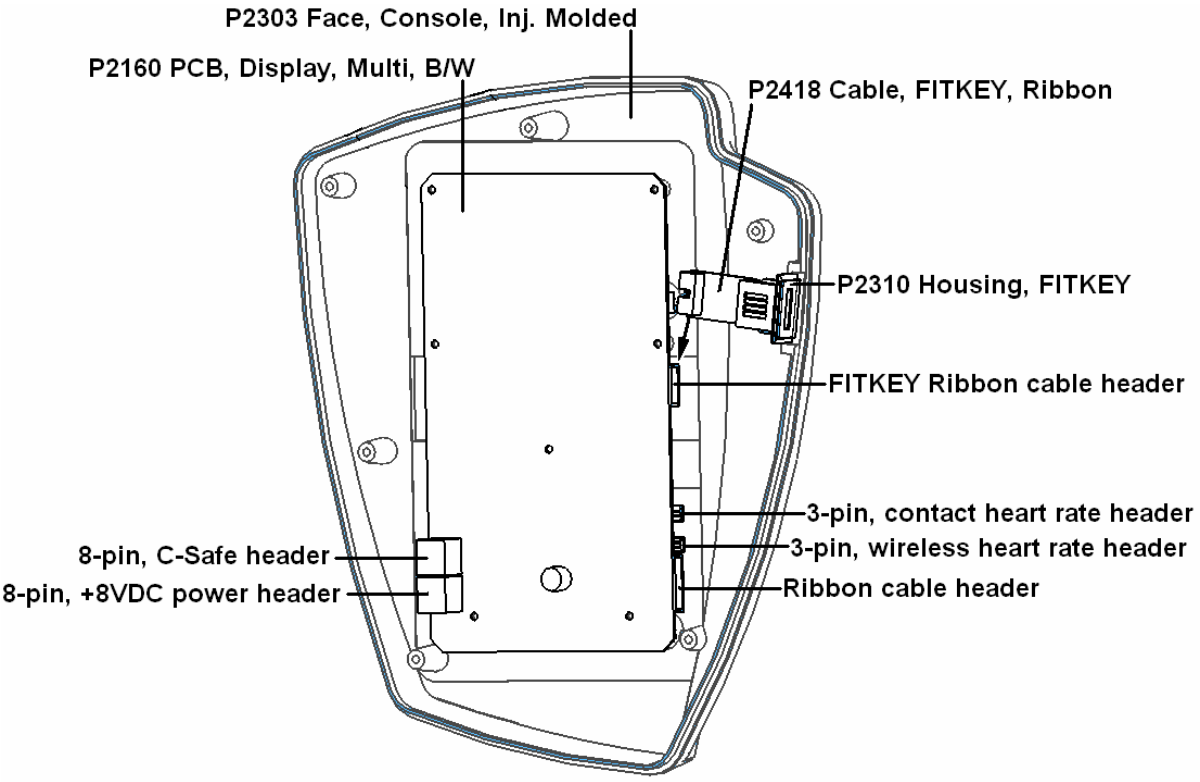
J. Wireless Heart Rate PCB Replacement (Use this procedure for SX1004's with serial numbers 905-005183 thru 905-005199, SX7000's with serial numbers 911-005245 thru 911-005273, and SXT7000's with serial numbers 970-005402 thru 970-005556.)





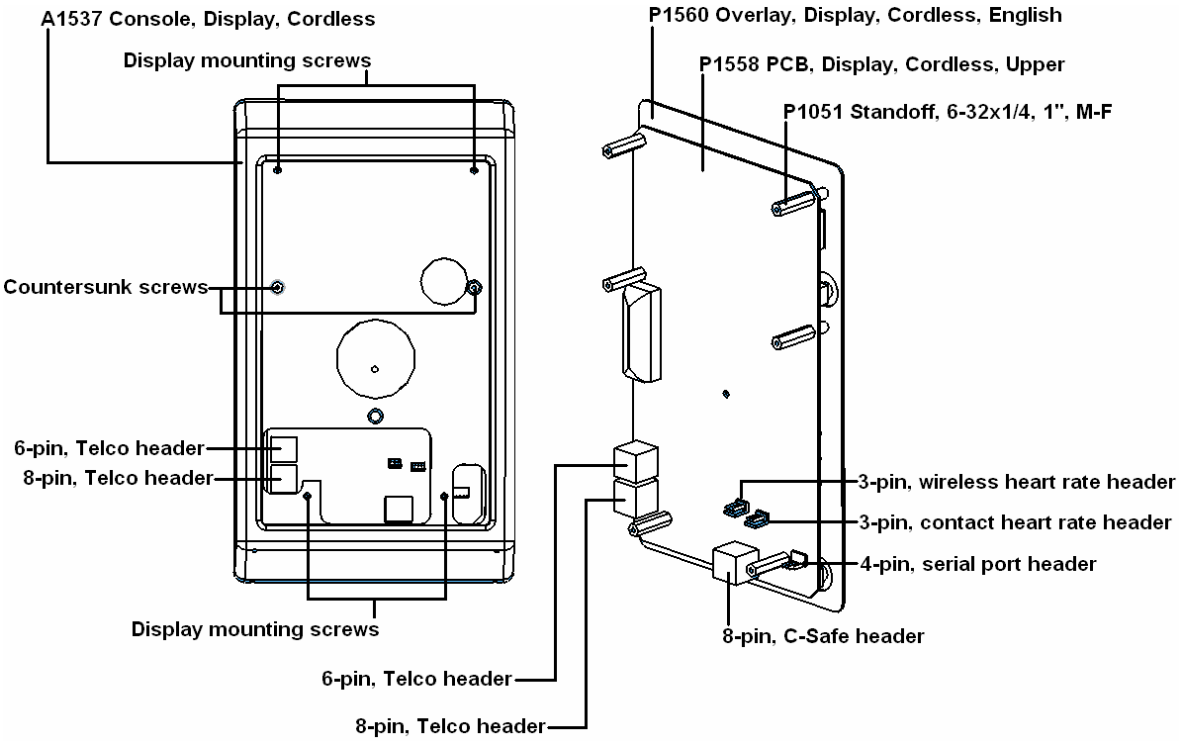
1. Remove the five (5) console screws in the console back (P2304), using a Philips screwdriver.
2. Disconnect all cables running to the upper PCB (P2160) and remove console face (P2303) from the unit. ***Make sure the cables do not fall into the neck of the unit.***
3. Locate the wireless heart rate mounting location.
4. Peel the old wireless heart rate PCB (P2501) from the console face.
5. Clean the wireless heart rate mounting location.
6. Apply adhesive to the back of the wireless heart rate PCB.
7. Mount the wireless heart rate PCB.
8. Reconnect all cables to the upper PCB (as shown below).
    - Plug the wireless heart rate PCB back into the upper PCB. It plugs into the bottom 3-pin header on the right side of the upper PCB (as shown in the drawing).

- The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the top, 3-pin header on the right side of the upper PCB, above the wireless heart rate header (as shown in the drawing).
- The ribbon cable plugs into the bottom ribbon cable header on the right side of the upper PCB (as shown in the drawing).
- The FITKEY ribbon cable (P2418) plugs into the FITKEY ribbon cable header on the upper PCB. This header is located just above the contact heart rate header (as shown in the drawing).
- There are two (2) gray Telco cables. The cable from the 8VDC jack affixed to the console back connects to the 8-pin, +8VDC power header on the upper PCB. The other cable from the COMM jack affixed to the console back connects to the 8-pin, C-Safe header.


P2303 Face, Console, Inj. Molded
P2160 PCB, Display, Multi, B/W
P2418 Cable, FITKEY, Ribbon
P2310 Housing, FITKEY
FITKEY Ribbon cable header
3-pin, contact heart rate header
3-pin, wireless heart rate header
Ribbon cable header
8-pin, C-Safe header
8-pin, +8VDC power header

9. Verify connections.
10. Match the console and face up to each other and install the five (5) console screws, using a Philips screwdriver.
11. Test operation of the unit and wireless heart rate.

K. Contact Heart Rate PCB Replacement (Use this procedure for all SX500's, SX1004's thru serial number 905-005171, SX7000's thru 911-005227, and SXT7000's thru 970-005361.)

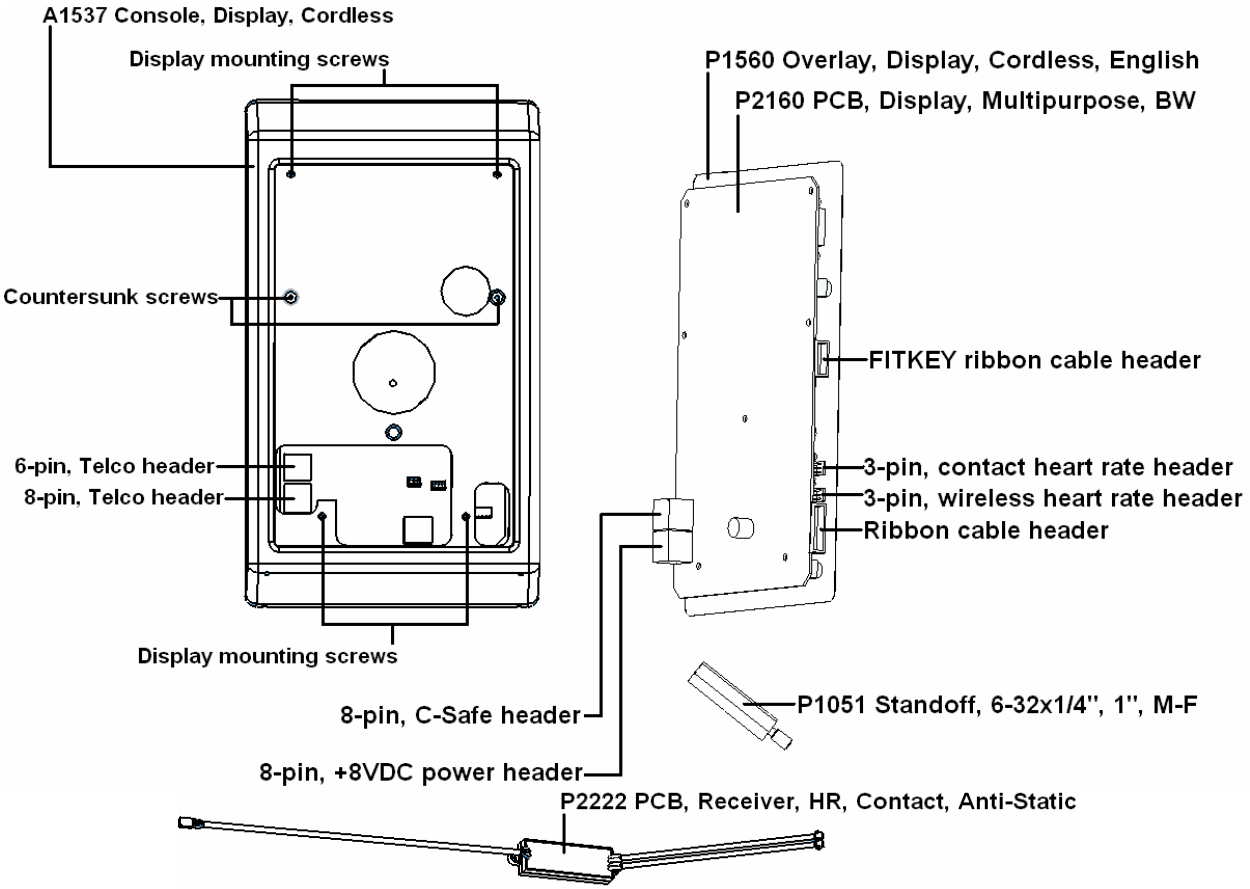


1. Using a Philips screwdriver, remove the four (4) display mounting screws on the back of the display mounting plate.
2. Disconnect all cables running from the neck of the unit to the upper PCB and remove the upper console assembly from the unit. ***Make sure the cables do not fall into the neck of the unit.***
3. Pop the grommet out of the hole leading down into the neck of the unit.
4. Pull the small, round, black or gray-jacketed cable that connects to the contact heart rate PCB (P2222) up through the hole in the neck until you see two (2) connection points.
5. Disconnect each connection by pressing down on the raised tabs and pulling cables apart. ***Do not let the cables fall into the neck of the unit.***
6. Install new contact heart rate PCB. Line up the connectors. The hook on the contact heart rate PCB cable header should line up with the raised tab on the other cable. Push connections together until they snap in place.
7. Remove the anti-static foam from the old contact heart rate PCB and install on the new PCB.
8. Reinsert the contact heart rate PCB into the neck of the unit.
9. Run the cables through the center of the grommet. Reinstall the grommet into the hole of the neck.
10. Reconnect all cables to the upper PCB.

- The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the outermost, 3-pin Molex header next to where the wireless heart rate PCB plugs into.
- When looking at the back of the upper PCB, the Telco cables plug in along the left edge. The 6-pin plugs into the top plug and the 8-pin plugs into the bottom plug.
- If your unit has Cardio Key, the cable plugs into the serial port, which is the 4-pin Molex header lower right corner.
- If your unit has Broadcast Vision, Cardio Theater, etc., the cable connects to the 8-pin header located at the bottom center of the upper PCB.

11. Place the console assembly back onto the mounting plate and install the four (4) display mounting screws.

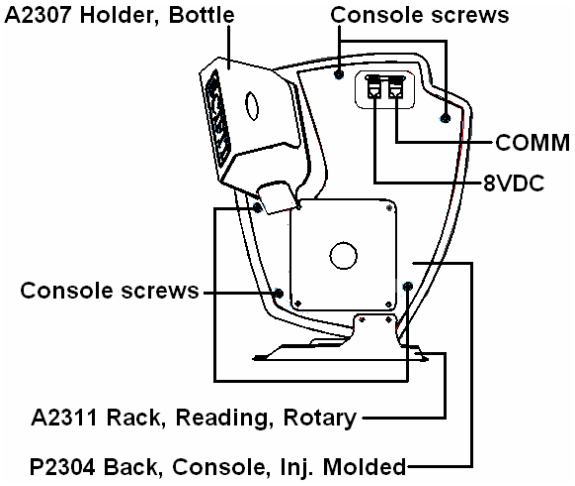
L. Contact Heart Rate PCB Replacement (Use this procedure for SX1004's with serial numbers 905-005171 thru 905-005182, SX7000's with serial numbers 911-005228 thru 911-005244, and SXT7000's with serial numbers 970-005362 thru 970-005401.)

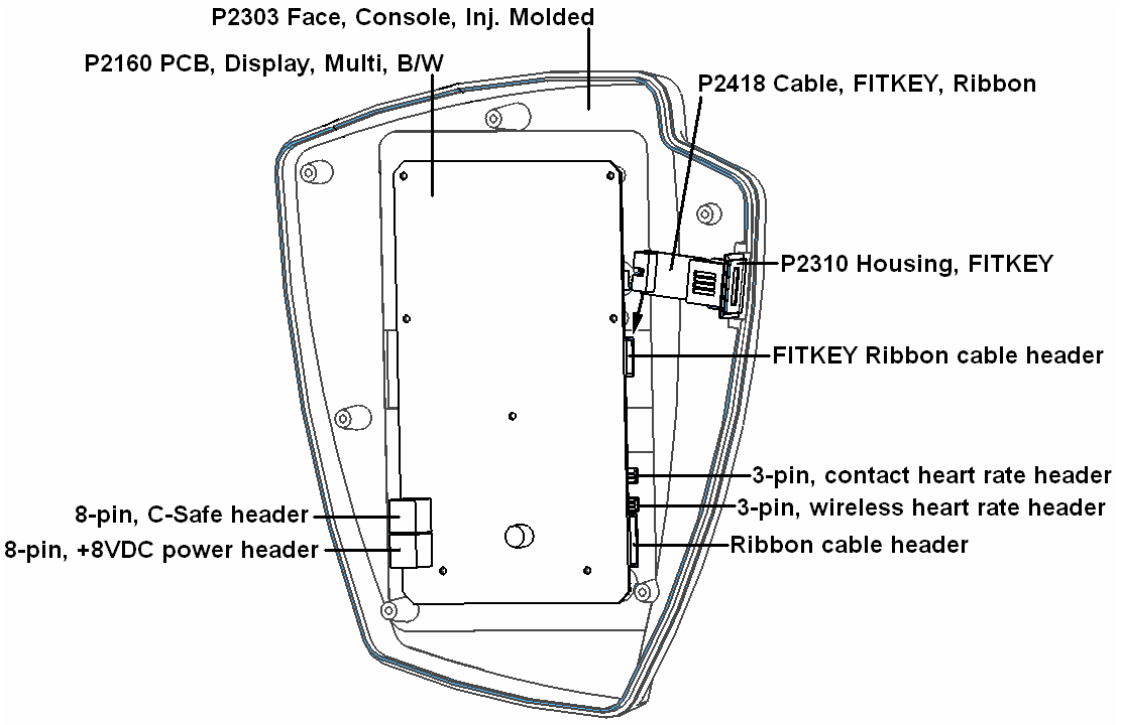


1. Using a Philips screwdriver, remove the four (4) display mounting screws on the back of the display mounting plate.

2. Remove the two (2) outer countersunk screws in the back of the plastic console (A1537), using a Philips screwdriver. This will free the upper PCB (P2160) and overlay (P1560) from the plastic console. ***Do not touch any components on the upper PCB. Touching components could cause static damage.***
3. Disconnect all cables running to the upper PCB and remove the upper console assembly from the unit. ***Make sure the cables do not fall into the neck of the unit.***
4. Pop the grommet out of the hole leading down into the neck of the unit.
5. Pull the small, round, black or gray-jacketed cable that connects to the contact heart rate PCB (P2222) up through the hole in the neck until you see two (2) connection points.
6. Disconnect each connection by pressing down on the raised tabs and pulling the cables apart. ***Do not let the cables fall down into the neck of the unit.***
7. Install the new contact heart rate PCB. Line up the connectors. The hook on the contact heart rate PCB cable header should line up with the raised tab on the other cable. Push the connections together until they snap in place.
8. Remove the anti-static foam from the old contact heart rate PCB and install on the new PCB.
9. Reinsert the contact heart rate PCB into the neck of the unit.
10. Run the cables through the center of the grommet.
11. Reinstall the grommet into the hole of the neck.
12. Reinsert cables through the hole in the back of the console.
13. Reconnect all cables to upper PCB (as shown at top of this procedure).
    - Plug the wireless heart rate PCB back into the upper PCB. It plugs into the bottom 3-pin header on the right side of the upper PCB (as shown above).
    - The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the top, 3-pin header on the right side of the upper PCB, above the wireless heart rate header.
    - The ribbon cable plugs into the bottom ribbon cable header on the right side of the upper PCB.
    - If your unit has Broadcast Vision, Cardio Theater, etc., the cable connects to the 8-pin, +8VDC power header. When looking at the upper PCB from the front, this header is located on the lower right backside corner of the upper PCB (as shown above).
14. Reinsert the upper PCB assembly into the front of the console.
15. Reinstall the two (2) outer countersunk screws in the back of the plastic console.
16. Place the display assembly back onto the mounting plate and install the four (4) display mounting screws.
17. Verify operations of the contact heart rate by using different programs except the Heart Rate Control program. The Heart Rate Control program requires the use of a wireless chest strap.

M. Contact Heart Rate PCB Replacement (Use this procedure for SX1004's with serial numbers 905-005183 thru 905-005199, SX7000's with serial numbers 911-005245 thru 911-005273, and SXT7000's with serial numbers 970-005402 thru 970-005556.)

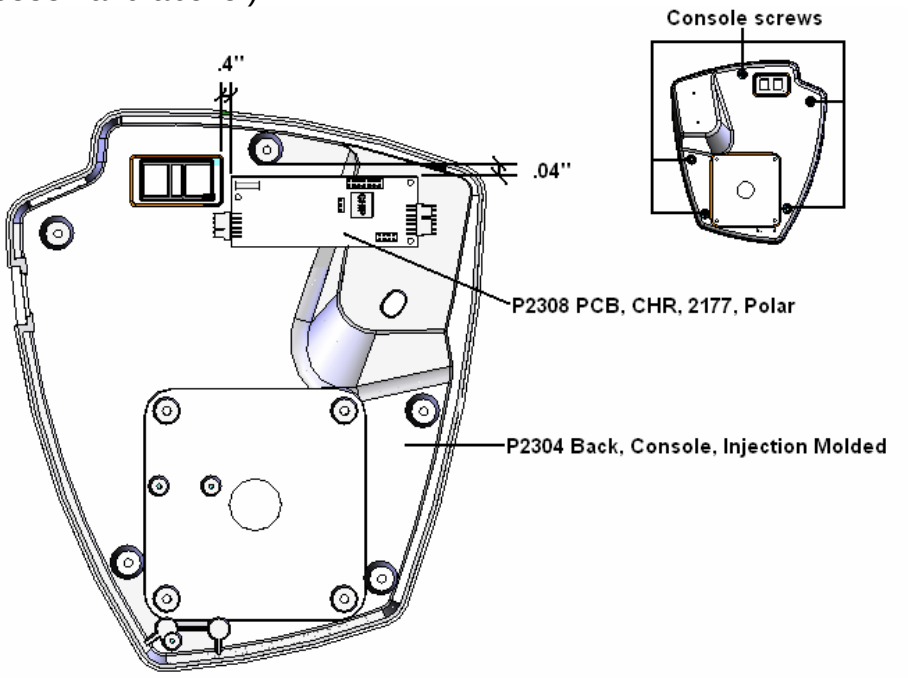



P2303 Face, Console, Inj. Molded
P2160 PCB, Display, Multi, B/W
P2418 Cable, FITKEY, Ribbon
P2310 Housing, FITKEY
FITKEY Ribbon cable header
3-pin, contact heart rate header
3-pin, wireless heart rate header
Ribbon cable header
8-pin, C-Safe header
8-pin, +8VDC power header
P2222 PCB, Receiver, HR, Contact, Anti-Static

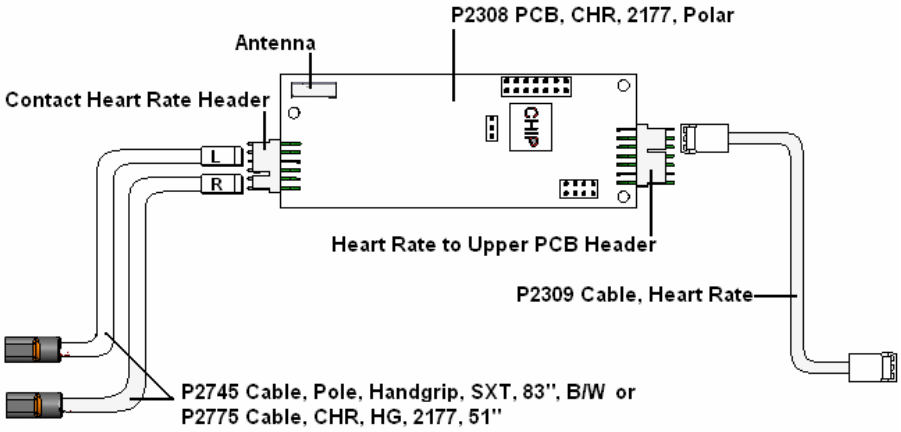
1. Remove the five (5) console screws in the console back (P2304), using a Philips screwdriver.
2. Disconnect all cables running to the upper PCB (P2160) and remove console face (P2303) from the unit. ***Make sure the cables do not fall into the neck of the unit.***

3. Remove the four (4) display mounting screws to remove the console back from the mounting plate. ***Make sure the cables do not fall into the neck of the unit.***
4. Pop the grommet out of the hole leading down into the neck of the unit.
5. Pull the small, round, black or gray-jacketed cable that connects to the contact heart rate PCB (P2222) up through the hole in the neck until you see two (2) connection points.
6. Disconnect each connection by pressing down on the raised tabs and pulling the cables apart. ***Do not let the cables fall down into the neck of the unit.***
7. Install the new contact heart rate PCB. Line up the connectors. The hook on the contact heart rate PCB cable header should line up with the raised tab on the other cable. Push the connections together until they snap in place.
8. Remove the anti-static foam from the old contact heart rate PCB and install on the new PCB.
9. Reinsert the contact heart rate PCB into the neck of the unit.
10. Run the cables through the center of the grommet. Reinstall the grommet into the hole of the neck.
11. Run cables through the hole in the console back.
12. Remount the console back by reinstalling the four (4) display mounting screws.
13. Reconnect all cables to the upper PCB (as shown at the top of procedure).
    - Plug the wireless heart rate PCB back into the upper PCB. It plugs into the bottom 3-pin header on the right side of the upper PCB (as shown in the drawing).
    - The contact heart rate PCB has a cable coming up from the neck of the unit. This plugs into the top, 3-pin header on the right side of the upper PCB, above the wireless heart rate header (as shown in the drawing).
    - The ribbon cable plugs into the bottom ribbon cable header on the right side of the upper PCB (as shown in the drawing).
    - The FITKEY ribbon cable (P2418) plugs into the FITKEY ribbon cable header on the upper PCB. This header is located just above the contact heart rate header (as shown in the drawing).
    - There are two (2) gray Telco cables. The cable from the 8VDC jack affixed to the console back connects to the 8-pin, +8VDC power header on the upper PCB. The other cable from the COMM jack affixed to the console back connects to the 8-pin, C-Safe header.
14. Verify connections.
15. Match the console and face up to each other and install the five (5) console screws, using a Philips screwdriver.
16. Verify operations of the contact heart rate by using different programs except the Heart Rate Control program. The Heart Rate Control program requires the use of a wireless chest strap.

N. Combo Heart Rate PCB Replacement (Use this procedure for SX1004's with serial number 905-005200 and above, SX7000's with serial number 911-005274 and above, and SXT7000's with serial numbers 970-005557 and above.)



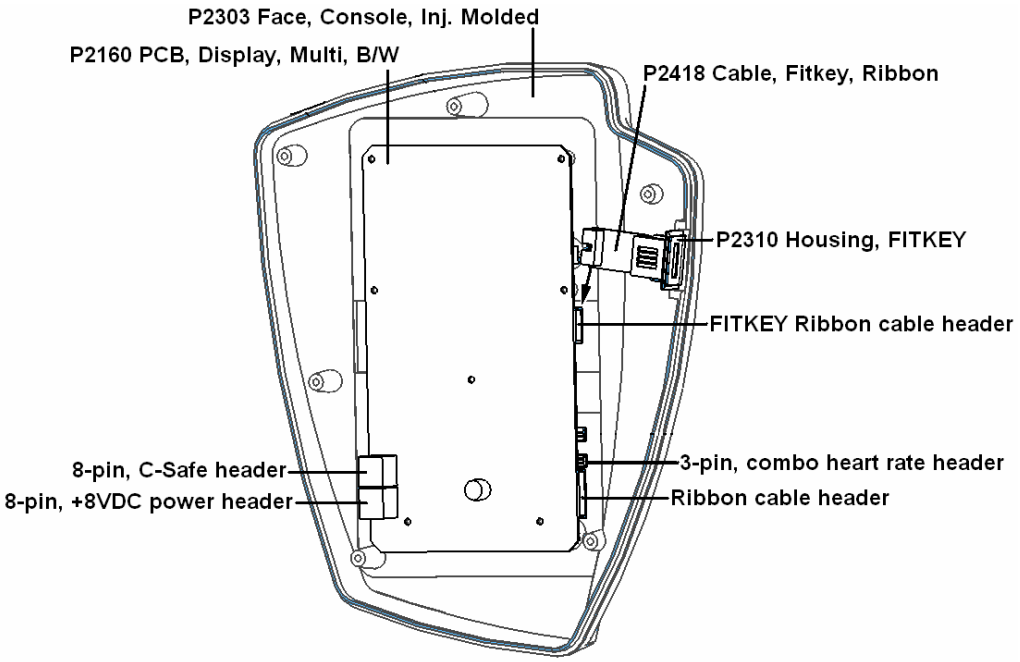
(Combo Heart Rate PCB Placement)


P2308 PCB, CHR, 2177, Polar
Antenna
Contact Heart Rate Header
L
R
Heart Rate to Upper PCB Header
P2309 Cable, Heart Rate
P2745 Cable, Pole, Handgrip, SXT, 83", B/W or
P2775 Cable, CHR, HG, 2177, 51"

(Combo Heart Rate Cable Connections)

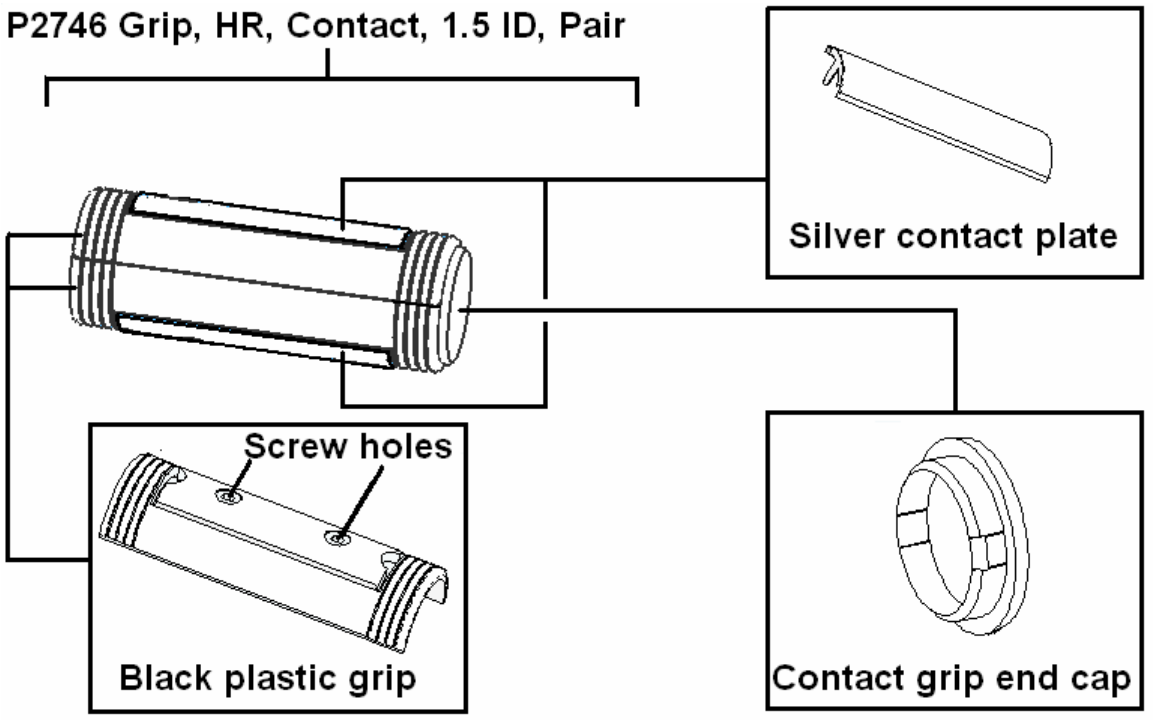
1. Remove the five (5) console screws in the console back (P2304), using a Philips screwdriver.
2. Disconnect all cables running to the upper PCB (P2160) and remove console face (P2303) from the unit. ***Make sure the cables do not fall into the neck of the unit.***
3. Disconnect the three (3) cables connected to combo heart rate PCB (P2308). ***Do not remove cable tie holding the wires in place.***
4. Remove old combo heart rate PCB. This is held on by hook-and-loop tape (Velcro).

5. Install new combo heart rate PCB in location shown in the drawing at the top of this procedure. ***Note: The placement is very critical. The antenna will not pick up a wireless transmitter if the placement is off.***
6. Plug the hand grip cables (P2745 on SXT's or P2775 on SX's) into the new combo heart rate PCB. ***Note: The top pin is not used. The cable header with the "L" written on it plugs into the next two prongs of the contact heart rate header. The next pin is not used. The cable header with the "R" gets plugged into the bottom two prongs.***
7. Plug the heart rate cable (P2309) back into the combo heart rate PCB. ***Note: This plugs into the top three prongs of the heart rate to upper PCB header. The bottom four (4) prongs are not used.***
8. Plug the other end of the heart rate cable into the wireless heart rate header on the upper PCB (P2160). See picture below.


P2303 Face, Console, Inj. Molded
P2160 PCB, Display, Multi, B/W
P2418 Cable, Fitkey, Ribbon
P2310 Housing, FITKEY
FITKEY Ribbon cable header
8-pin, C-Safe header
8-pin, +8VDC power header
3-pin, combo heart rate header
Ribbon cable header

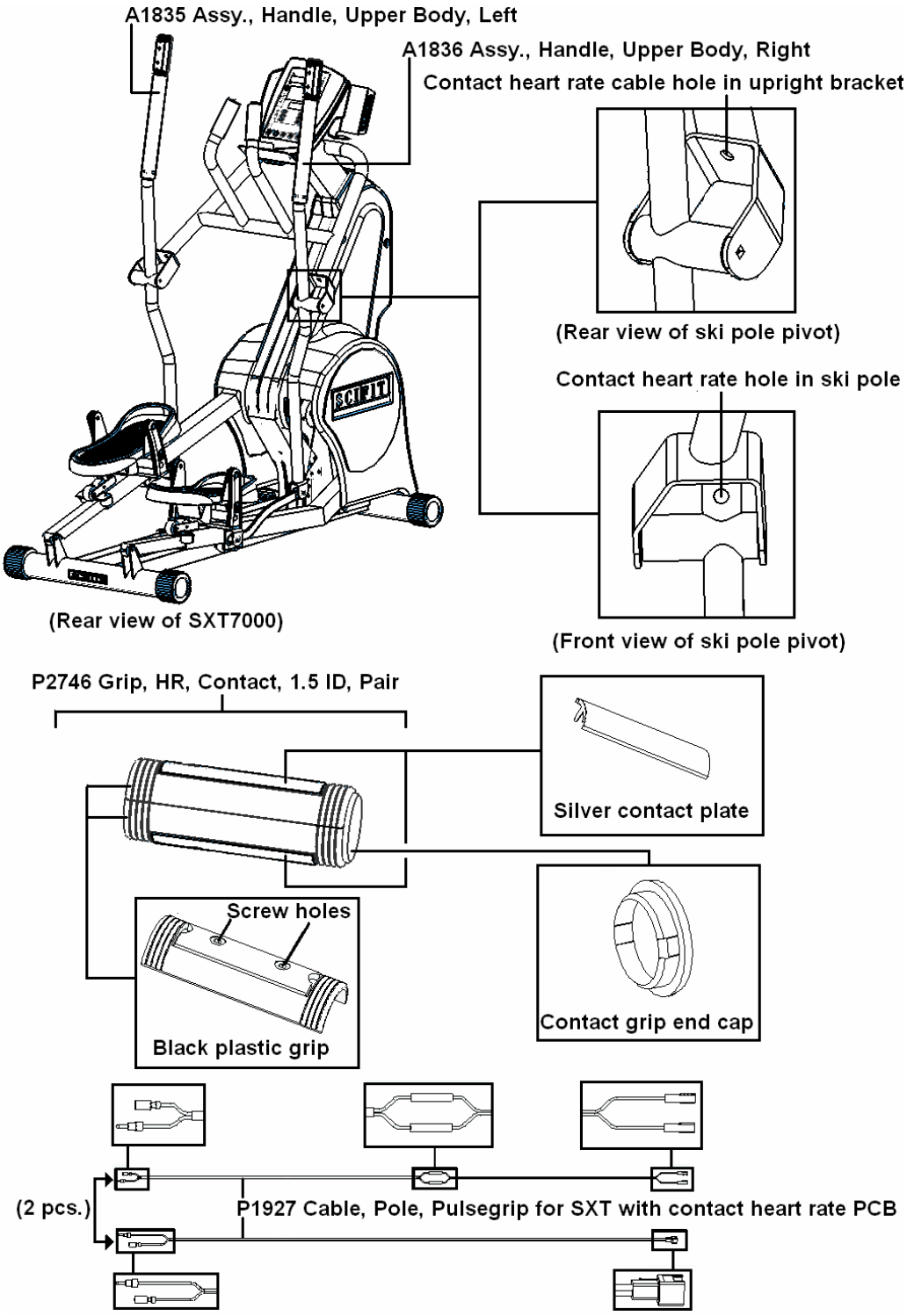
9. Reconnect all cables to the upper PCB.
    - The ribbon cable plugs into the bottom ribbon cable header on the right side of the upper PCB (as shown in the drawing).
    - The FITKEY ribbon cable (P2418) plugs into the FITKEY ribbon cable header on the upper PCB. This header is located just above the contact heart rate header (as shown in the drawing).
    - There are two (2) gray Telco cables. The cable from the 8VDC jack affixed to the console back connects to the 8-pin, +8VDC power header on the upper PCB. The other cable from the COMM jack affixed to the console back connects to the 8-pin, C-Safe header.
10. Test operation using the contact grips then a chest strap. ***Note: Contact Grips do not work in Heart Rate program.***

O. Contact Grip Replacement SX, SXT



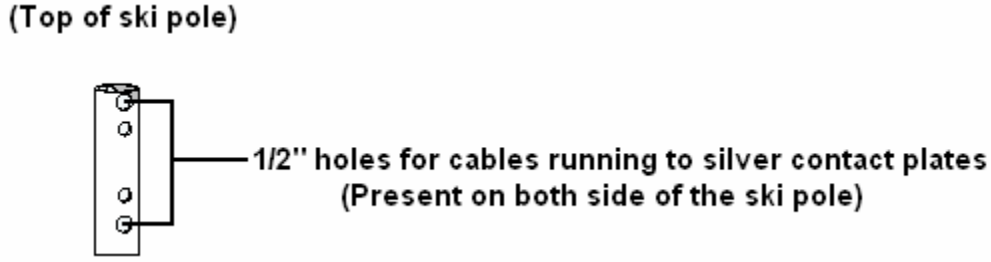
1. Insert the head of a small flathead screwdriver between the black plastic grip and contact grip end cap. Pry the end cap off and set aside.
2. Insert the head of the screwdriver under the corner of each silver plate and pry away from the black plastic grip. ***Note: There are cables connected to each plate.***
3. Disconnect the contact grip cable from each silver contact plate on the SX's. Disconnect the ski pole cable (P1927 or P2773) from the silver contact plate on the SXT's. ***Do not let the cables fall inside the handlebars on the SX's or the ski poles on the SXT's.***
4. Using a small Philips screwdriver, remove the two (2) screws that run through the center of each black plastic grip. ***Do not lose the nuts that are on the opposite side of the black plastic grip as the screw heads.***
5. Remove the black plastic grips.
6. Position new black plastic grips and reinstall the screws and nuts in each. ***Be careful not to over-tighten the screws as this will cause the black plastic grip to break.***
7. Reconnect the contact grip cable or ski pole cable to each silver contact plate. ***Note: The cable with the white stripe connects to the silver plate that makes contact with the palm.***
8. Insert silver plate back into the channel in the black plastic grip. Make sure not to pinch the cables under the silver contact plate.
9. Install the contact grip end cap.
10. Test the unit in different programs to verify operation. ***Do not use the Heart Rate program as it requires the use of a wireless chest strap.***

P. Ski Pole Contact Heart Rate Cable Replacement (Use this procedure for SXT7000's with serial numbers thru 970-005556.)


A1835 Assy., Handle, Upper Body, Left
A1836 Assy., Handle, Upper Body, Right
Contact heart rate cable hole in upright bracket
(Rear view of ski pole pivot)
Contact heart rate hole in ski pole
(Rear view of SXT7000)
(Front view of ski pole pivot)
P2746 Grip, HR, Contact, 1.5 ID, Pair
Silver contact plate
Screw holes
Black plastic grip
Contact grip end cap
(2 pcs.)
P1927 Cable, Pole, Pulsegrip for SXT with contact heart rate PCB

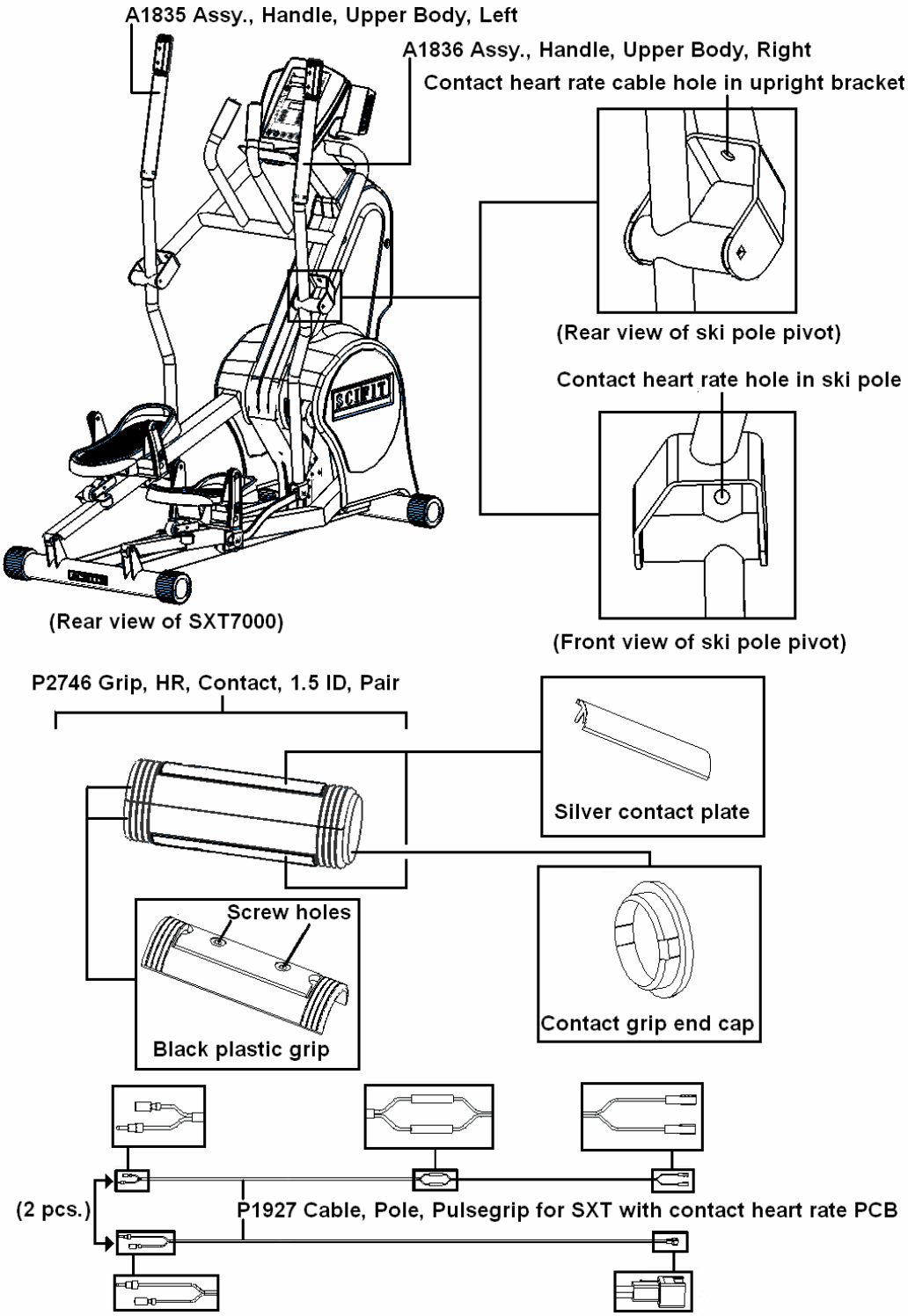
1. Remove the grommets in contact heart rate holes in both the upright bracket and the ski pole.

2. Pull the contact heart rate cable out of the upright until you can access the two (2) connection points on the ski pole cables (P1927).
3. Pull each male-to-female connection apart in the middle of the ski pole cables.
4. Insert the head of a small flathead screwdriver between the black plastic grip and contact grip end cap. Pry the end cap off and set aside.
5. Insert the head of the screwdriver under the corner of each silver plate and pry away from the black plastic grip. ***Note: There are cables connected to each plate.***
6. Disconnect the ski pole cable (P1927) from the silver contact plate. ***Do not let the cables fall inside the ski poles.***
7. Using a small Philips screwdriver, remove the two (2) screws that run through the center of each black plastic grip. ***Do not lose the nuts that are on the opposite side of the black plastic grip as the screw heads.***
8. Remove the black plastic grips.
9. Tape the two (2) female ends on the new cable, which connect to the silver contact plate, to the male-to-female connections on the end of the old ski pole cable.
10. Pull the old cable out the top of the ski pole while guiding the other end through the contact heart rate cable hole in the ski pole.
11. Remove the tape when the two (2) female connections on the new cable come out the top of the ski pole.
12. Insert one (1) of the female connections through the top ½" hole on one (1) side of the top of the ski pole. Insert the other female connection through the bottom hole on the opposite side of the same ski pole. See diagram below.



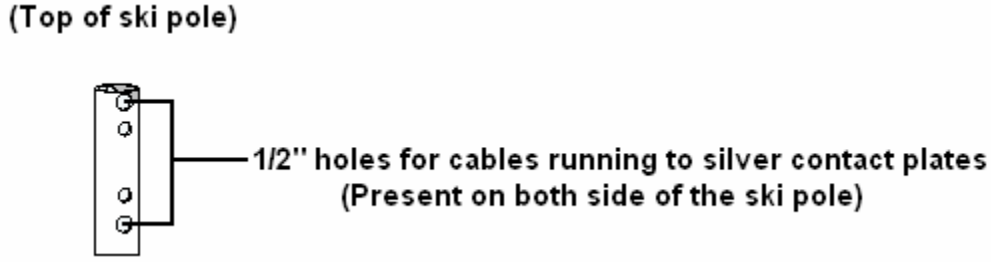
13. Insert each cable through the black plastic grips.
14. Reposition black plastic grips and reinstall the screws and nuts in each. ***Be careful not to over-tighten the screws as this will cause the black plastic grip to break.***
15. Reconnect the ski pole cable to each silver contact plate.
16. Insert silver plate back into the channel in the black plastic grip. Make sure not to pinch the cables under the silver contact plate.
17. Install the contact grip end cap.
18. Test the unit in different programs to verify operation. ***Do not use the Heart Rate program as it requires the use of a wireless chest strap.***

Q. **Ski Pole Contact Heart Rate Cable Replacement** (Use this procedure for SXT7000's with serial numbers 970-005557 and above.)


A1835 Assy., Handle, Upper Body, Left
A1836 Assy., Handle, Upper Body, Right
Contact heart rate cable hole in upright bracket
(Rear view of ski pole pivot)
Contact heart rate hole in ski pole
(Rear view of SXT7000)
(Front view of ski pole pivot)
P2746 Grip, HR, Contact, 1.5 ID, Pair
Silver contact plate
Screw holes
Black plastic grip
Contact grip end cap
(2 pcs.)
P1927 Cable, Pole, Pulsegrip for SXT with contact heart rate PCB

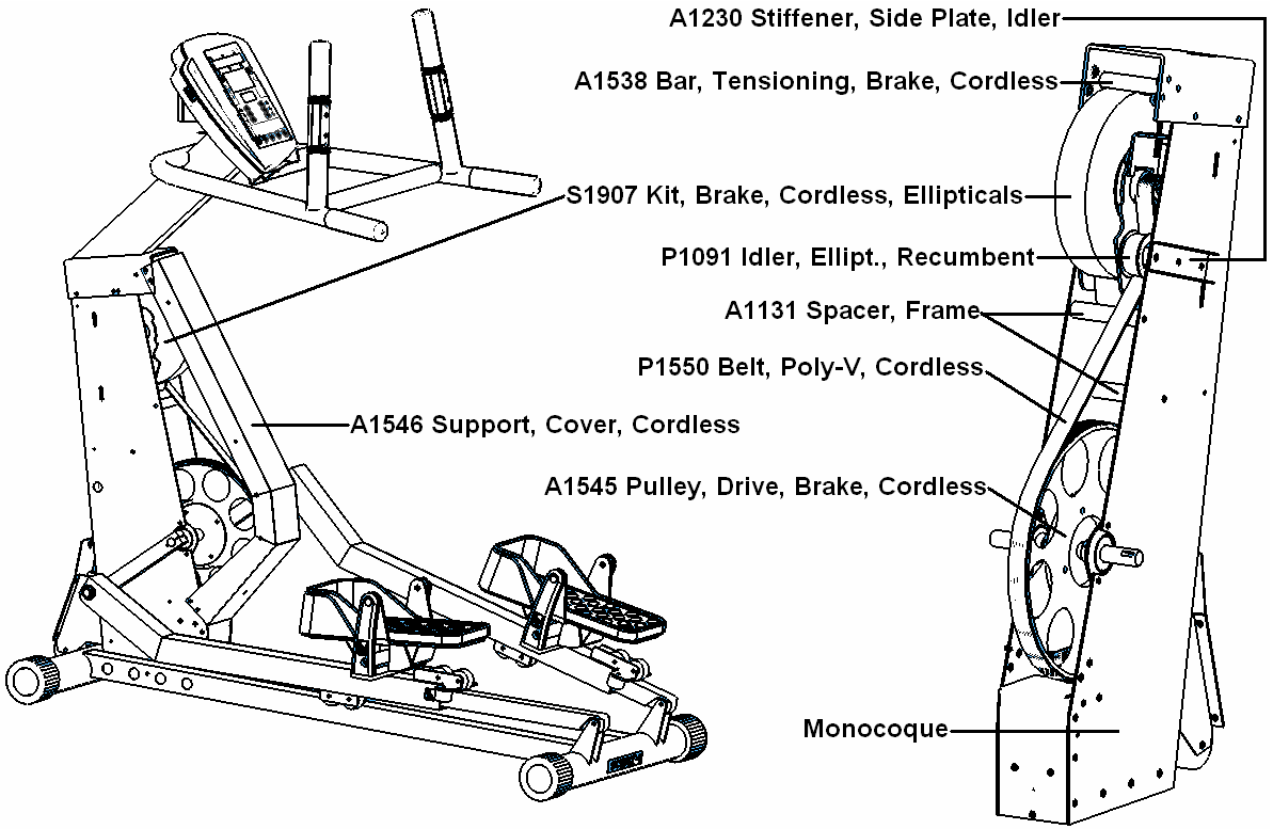
1. Remove the grommets in contact heart rate holes in both the upright bracket and the ski pole.

2. Pull the contact heart rate cable out of the upright until you can access the two (2) connection points on the ski pole cables (P2773).
3. Pull each male-to-female connection apart in the middle of the ski pole cables.
4. Insert the head of a small flathead screwdriver between the black plastic grip and contact grip end cap. Pry the end cap off and set aside.
5. Insert the head of the screwdriver under the corner of each silver plate and pry away from the black plastic grip. ***Note: There are cables connected to each plate.***
6. Disconnect the ski pole cable (P2773) from the silver contact plate. ***Do not let the cables fall inside the ski poles.***
7. Using a small Philips screwdriver, remove the two (2) screws that run through the center of each black plastic grip. ***Do not lose the nuts that are on the opposite side of the black plastic grip as the screw heads.***
8. Remove the black plastic grips.
9. Tape the two (2) female ends on the new cable, which connect to the silver contact plate, to the male-to-female connections on the end of the old ski pole cable.
10. Pull the old cable out the top of the ski pole while guiding the other end through the contact heart rate cable hole in the ski pole.
11. Remove the tape when the two (2) female connections on the new cable come out the top of the ski pole.
12. Insert one (1) of the female connections through the top ½" hole on one (1) side of the top of the ski pole. Insert the other female connection through the bottom hole on the opposite side of the same ski pole. See diagram below.



13. Insert each cable through the black plastic grips.
14. Reposition black plastic grips and reinstall the screws and nuts in each. ***Be careful not to over-tighten the screws as this will cause the black plastic grip to break.***
15. Reconnect the ski pole cable to each silver contact plate.
16. Insert silver plate back into the channel in the black plastic grip. Make sure not to pinch the cables under the silver contact plate.
17. Install the contact grip end cap.
18. Test the unit in different programs to verify operation. ***Do not use the Heart Rate program as it requires the use of a wireless chest strap.***

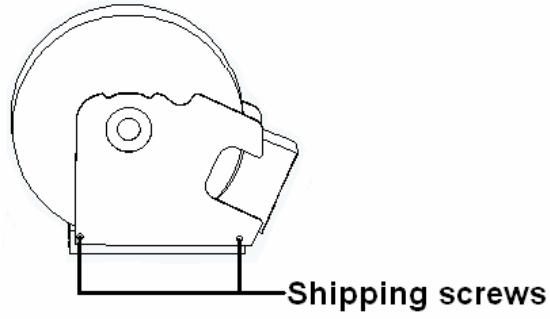
R. Brake Replacement


A1230 Stiffener, Side Plate, Idler
A1538 Bar, Tensioning, Brake, Cordless
S1907 Kit, Brake, Cordless, Ellipticals
P1091 Idler, Ellipt., Recumbent
A1131 Spacer, Frame
P1550 Belt, Poly-V, Cordless
A1546 Support, Cover, Cordless
A1545 Pulley, Drive, Brake, Cordless
Monocoque

Removal

1. Remove covers and water bottle holder (if mounted to the covers). A Philips screwdriver is used to remove the covers on newer units. For older units, a 1/8" Allen wrench or socket is required.
2. Remove the cover support (A1546), using a ½" wrench or socket. Four (4) bolts are located at the top of the support and two (2) at the bottom. Older machines only had two (2) bolts located at the top.
3. Disconnect both cables connecting to the brake. One (1) cable connection is located inside the monocoque and connects to the coil on the bottom of the brake. The other cable runs up the outside of the left side panel of the monocoque and connects to the brake.
4. Mark the position of the brake on the sides of the monocoque. Four (4) brake mounting bolts are located on the outside of the monocoque.
5. Loosen the four (4) black 10mm bolts mounting the brake (S1907) to the monocoque.
6. Back the brake tension bolt off, four (4) to five (5) turns to relieve belt tension. On newer machines, a 3/8" wrench is used. The older machines require a 5/32" Allen wrench.
7. Loosen the four (4) bolts that mount the frame spacers (A1131).
8. Loosen the two (2) bolts that mount the tensioning bar for the brake (A1538) to finger-tight. The tensioning bar will later be used as a handle to remove the brake.

9. Remove the four (4) black 10mm bolts mounting the brake (S1907) to the monocoque. The brake will be supported by the two (2) tensioning bar bolts, which should be finger-tight from the previous step.
10. Remove the Poly-V belt from the brake pulley.
11. Remove the top frame spacer (A1131). ***Warning: Do not remove the tensioning bar bolts, as the brake will fall, causing harm to the unit and/or person.***
12. Make sure all wires to the brake are disconnected and out of the way.
13. While holding the tensioning bar firmly, remove the tensioning bar bolts. ***Warning: The brake weighs approximately 40 lbs.***
14. While holding the tensioning bar with one hand, cradle the bottom of the brake with the other hand. Pull the brake towards you, channeling the idler pulley through the obstructions on the right side of the brake.



Installation

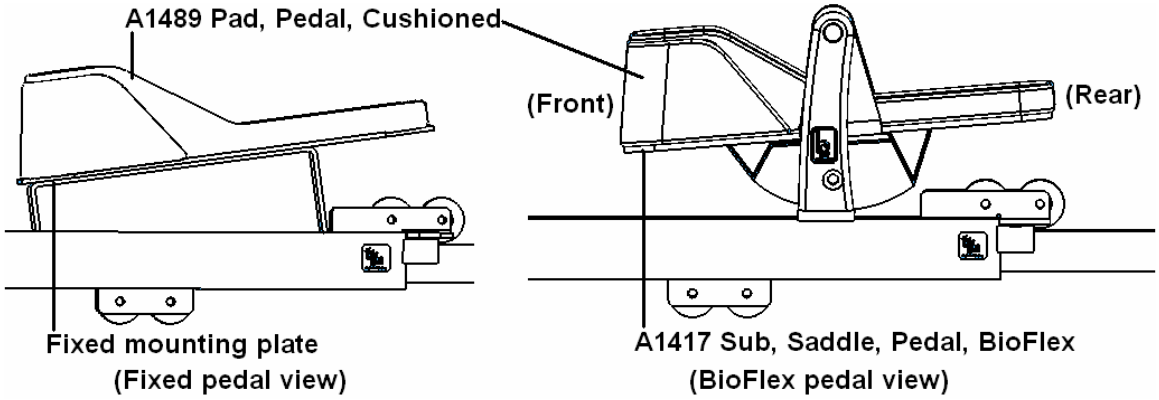
Installation is reversal of the removal procedure with the following exceptions:

1. Verify the Philips shipping screws have been removed from new brake.
2. Remove tension bolt and bar tensioning bar from the old brake and install on the new brake.
3. Before installation of the belt, return brake to original position marked on the sides of the monocoque. This action will preset the brake belt tension to its original setting. When the brake is at its original position, tighten the four (4) black 10mm bolts. Make sure all other bolts are tight and the cover brace is in place before the belt is installed on the brake pulley.
4. Place the belt onto the brake pulley. Loop the belt under the idler (P1091). Start the belt onto the back of the drive pulley (A1545). Move the crank arm in a forward motion to rotate the drive pulley, thus feeding the belt onto the drive pulley. ***Warning: Keep hands clear of the underside of the belt. Failure to do so could result in serious injury, including the loss of a finger. There will be approximately 110 lbs. of tension on the belt.*** If necessary, use a blunt object to push the belt when feeding it onto the drive pulley. Make sure the belt is in all grooves on the pulleys and is not rubbing on the side of the brake or idler. If it is rubbing, use a flat-head screwdriver to move the belt over on the drive pulley while rotating until the belt is centered.
5. Reattach wires to the brake.

S. Idler Replacement

1. Remove the brake by following steps 1-14 of the removal section of the brake replacement procedure.
2. Using a 9/16” socket, remove the nut and lock washer holding the idler to the monocoque. This is located on the right outer side of the monocoque.
3. Remove the bolt that runs through the center of the idler.
4. Insert the bolt through the new idler and back into mounting hole.
5. Install the lock washer and nut onto the idler mounting bolt. Tighten nut.
6. Reinstall the brake assembly by following steps 1-5 in the installation section of the brake replacement procedure.

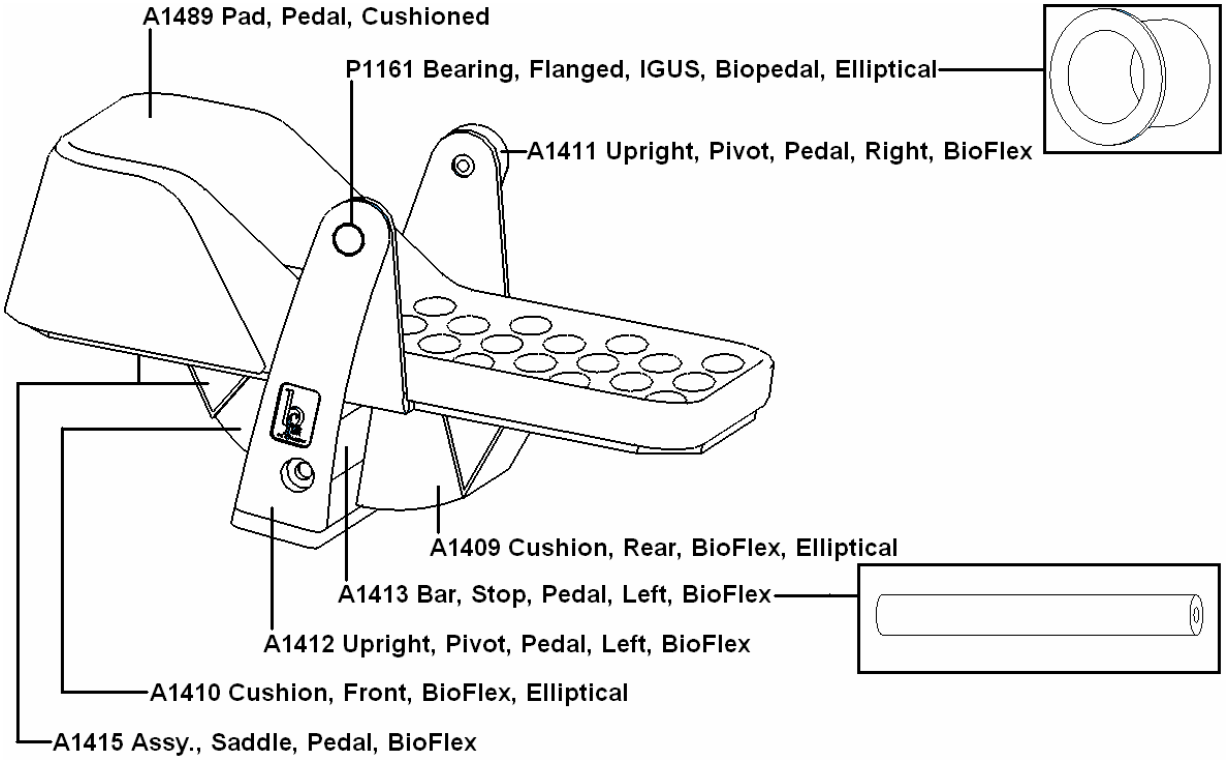
T. Foot Pad Replacement



1. Locate and remove the four (4) bolts and washers under the black foot pad mounting plate, using a 7/16” socket. (This is the plate the foot pad (A1489) mounts to.) Only the older units had bolts. Newer units do not.
2. Pull the old foot pad off. It is held on with super glue.
3. Clean the mounting surfaces with isopropyl alcohol.
4. Apply ten (10) beads of quick setting Super Glue to different areas of the black plate the foot pad mounts to. See the drawing for super glue drop locations.

5. Set the new foot pad in place.
6. Apply pressure to the top side of the foot pad for approximately 30-45 seconds to let the Super Glue set.

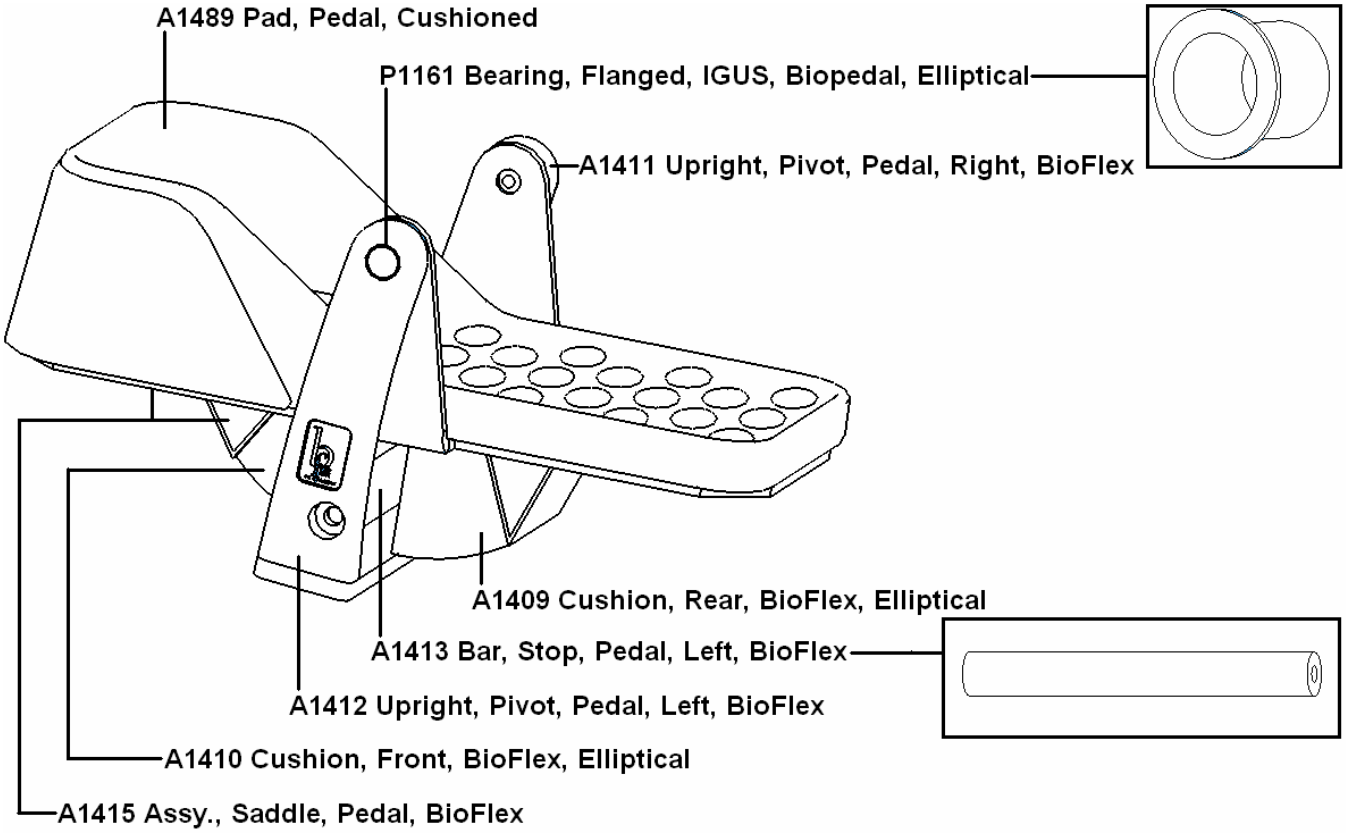
U. Front / Rear BioFlex Cushion Replacement


A1489 Pad, Pedal, Cushioned
P1161 Bearing, Flanged, IGUS, Biopedal, Elliptical
A1411 Upright, Pivot, Pedal, Right, BioFlex
A1409 Cushion, Rear, BioFlex, Elliptical
A1413 Bar, Stop, Pedal, Left, BioFlex
A1412 Upright, Pivot, Pedal, Left, BioFlex
A1410 Cushion, Front, BioFlex, Elliptical
A1415 Assy., Saddle, Pedal, BioFlex

1. Pull each cushion (A1410 and A1409) away from the saddle assembly (A1415). Each cushion is attached to the saddle assembly with hook-and-loop tape (Velcro).
2. Check the condition of the hook-and-loop tape affixed to the v-shaped brackets on the bottom of the saddle assembly. If needed, replace tape. New cushions come with both pieces of hook-and-loop tape.
3. Remount the front cushion which has the hook portion of the hook-and-loop tape affixed to it. ***Note: The hook portion is the more coarse side of the hook-and-loop tape.***
4. Remount the rear cushion which has the loop portion of the hook-and-loop tape affixed to it. ***Note: The loop portion is the softer side of the hoop-and-loop tape.***
5. Verify the cushions and mounting surfaces are mated correctly. Between the two (2) cushions, there is a stop bar (A1413). There should not be a gap between the bottom of the saddle assembly and the cushions nor between the cushions and the stop bar.

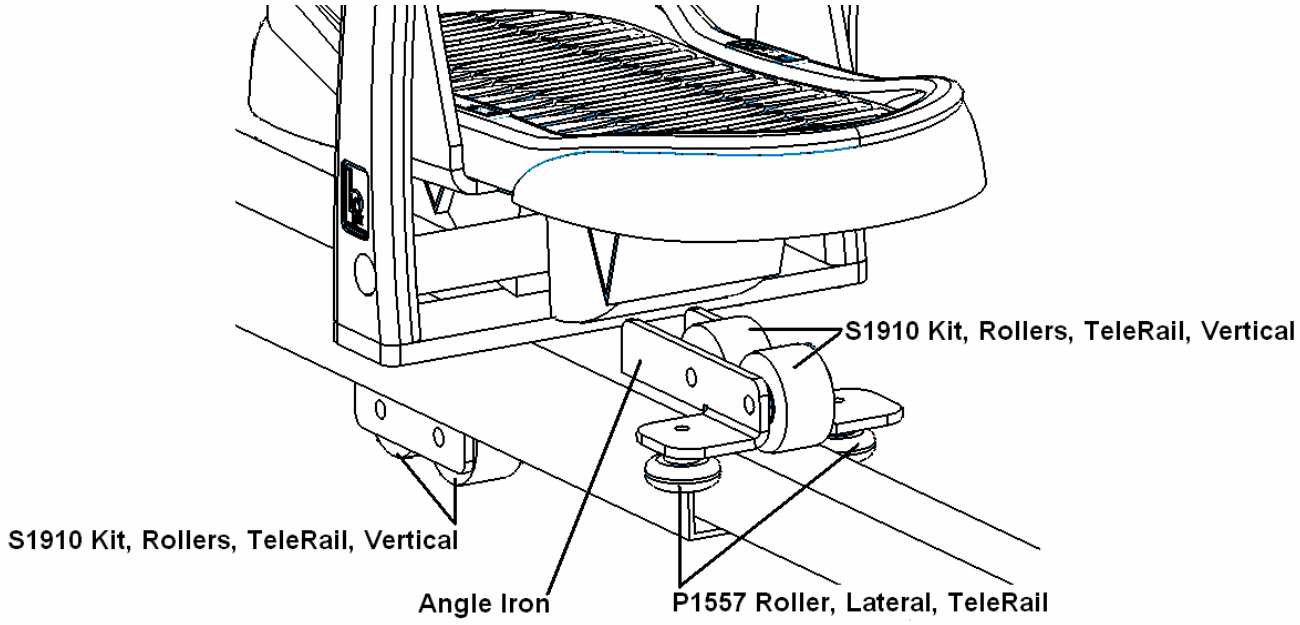
Note: The easiest way to tell the difference between the front and rear cushion is to look at the hook-and-loop tape mounting surface on the cushion itself. The cushion surface the hook-and-loop tape mounts to is smaller on the front cushion (A1410). The cushion surface the hook-and-loop tape mounts to is much larger on the rear cushion (A1409).

V. BioFlex Upright Igus Bearing Replacement


A1489 Pad, Pedal, Cushioned
P1161 Bearing, Flanged, IGUS, Biopedal, Elliptical
A1411 Upright, Pivot, Pedal, Right, BioFlex
A1409 Cushion, Rear, BioFlex, Elliptical
A1413 Bar, Stop, Pedal, Left, BioFlex
A1412 Upright, Pivot, Pedal, Left, BioFlex
A1410 Cushion, Front, BioFlex, Elliptical
A1415 Assy., Saddle, Pedal, BioFlex

1. Remove the two (2) Allen bolts with lock washers that run up into the bottom of each pivot upright (A1411 and A1412), using a 5/16” Allen wrench.
2. Remove the two (2) Allen bolts with lock washers that run through the pivot uprights and into the stop bar (A1413), using a 5/16” Allen wrench. There is one (1) bolt with lock washer through each pivot upright.
3. Pull each pivot upright vertically away from the mounting pegs on the saddle assembly.
4. Remove the old Igus bearing from each pivot upright.
5. Press the new Igus bearing into each pivot upright.
6. Start the two (2) Allen bolts with lock washers through the pivot upright into the bar stop. ***Do not tighten down.***
7. Reinstall the two (2) Allen bolts with lock washers up into the bottom of each pivot upright. Tighten.
8. Tighten the two (2) Allen bolts with lock washers connecting the pivot uprights to the bar stop.
9. Make sure all bolts are tight and test operation of the unit.

W. TeleRail Roller Replacement (Old) (Use this procedure for all SX500's, SX1004's with serial number 905-005170 and below, SX7000's 911-005205 and below, and SXT7000's 970-005330 and below.)



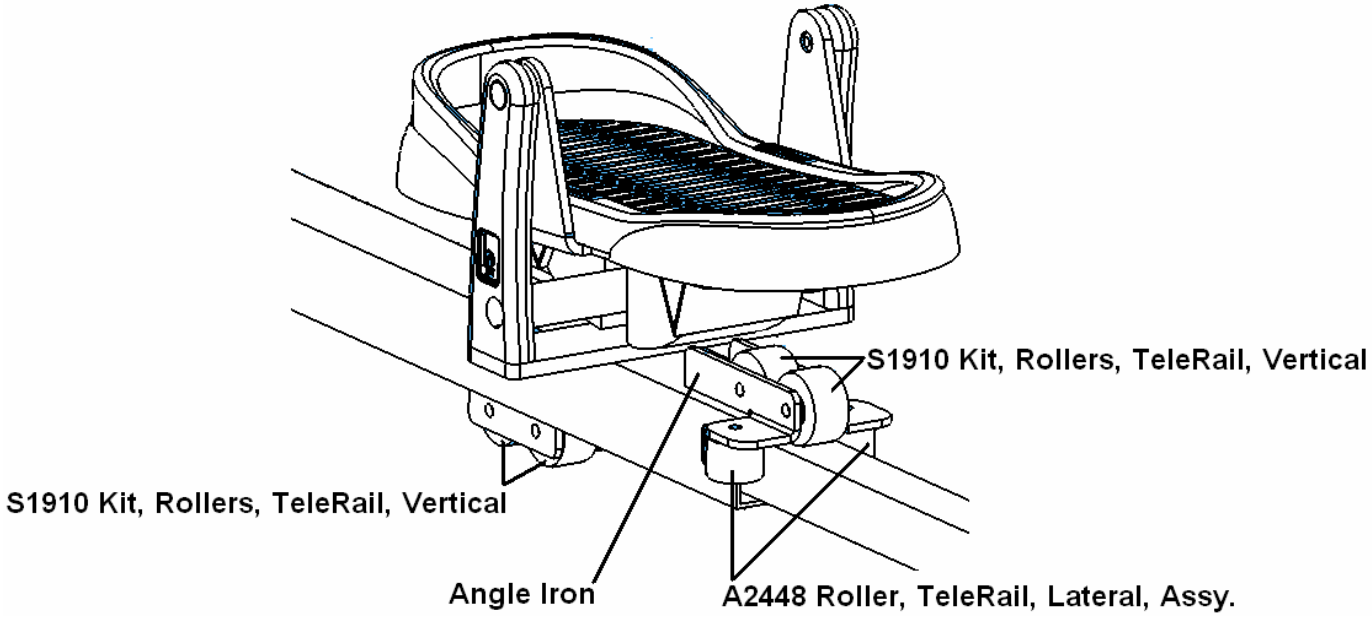
Lateral Roller Replacement

1. Remove the acorn nut attached to the bolt running through the lateral roller (P1557), using a 5/32" Allen wrench and 9/16" wrench.
2. Slide the lateral roller off the bolt and the new roller on in its place.
3. Install and tighten the acorn nut.

Vertical Roller Replacement

1. Remove the acorn nut attached to the bolt running through the track roller assembly (S1910), using a 9/16" wrench.
2. Remove the nut and lock washer, using a ½" wrench. This nut is located next to the acorn nut.
3. Grasp the vertical roller and pull the bolt out. There is a flat washer on each side between the track roller assembly and the angle iron. ***Do not lose these flat washers. The vertical roller assembly will not function properly without them.***
4. Install the new vertical roller assembly by inserting the bolt through the angle iron, flat washer, vertical roller assembly, flat washer, and then through the other side angle iron.
5. Start the nut onto the bolt. Tighten nut.
6. Install the acorn nut and tighten.

X. TeleRail Roller Replacement (Use this procedure for SX1004's with serial numbers 905-005171 and above, SX7000's 911-005206 and above, and SXT7000's 970-005330 and above.)


S1910 Kit, Rollers, TeleRail, Vertical
S1910 Kit, Rollers, TeleRail, Vertical
Angle Iron
A2448 Roller, TeleRail, Lateral, Assy.

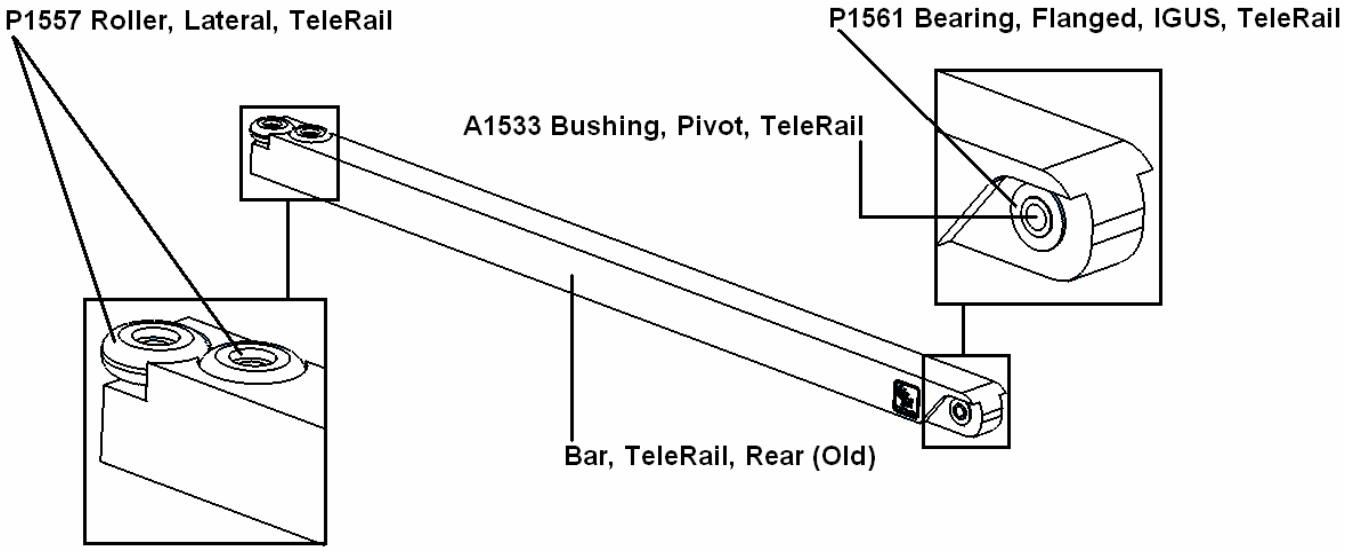
Lateral Roller Replacement

1. Remove the acorn nut attached to the bolt running through the lateral roller assembly (A2447), using a 3/16" Allen wrench and 9/16" wrench.
2. Slide the lateral roller assembly off the bolt and the new roller on in its place.
3. Install and tighten the acorn nut.

Vertical Roller Replacement

1. Remove the acorn nut attached to the bolt running through the track roller assembly (S1910), using a 9/16" wrench.
2. Remove the nut and lock washer, using a ½" wrench. This nut is located next to the acorn nut.
3. Grasp the track roller and pull the bolt out. There is a flat washer on each side between the vertical roller assembly and the angle iron. ***Do not lose these flat washers. The vertical roller assembly will not function properly without them.***
4. Install the new vertical roller assembly by inserting the bolt through the angle iron, flat washer, vertical roller assembly, flat washer, and then through the other side angle iron.
5. Start the nut onto the bolt. Tighten nut.
6. Install the acorn nut and tighten.

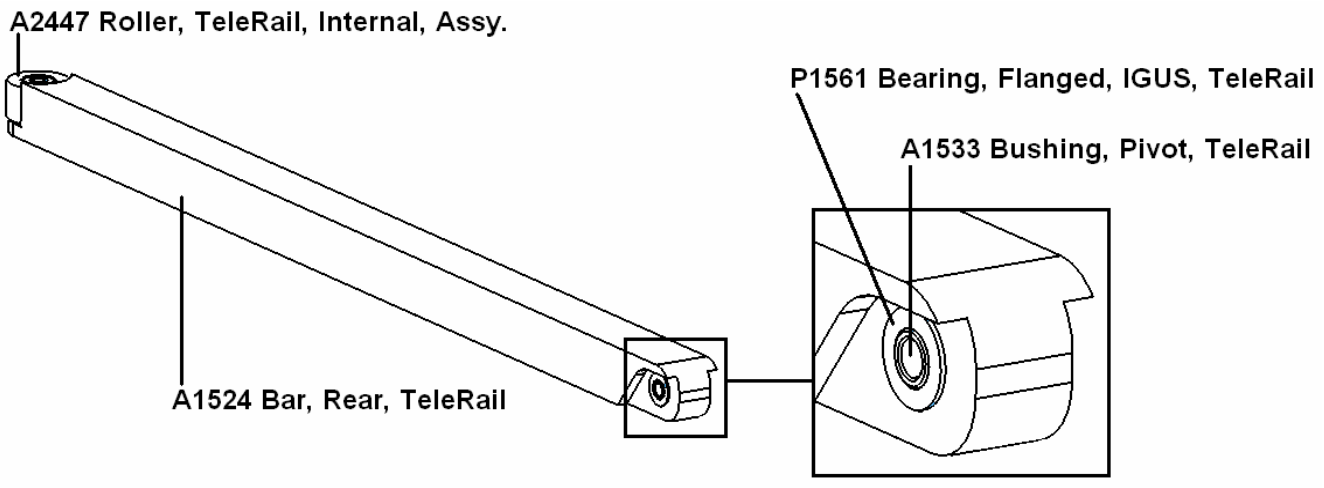
Y. Interior Roller Replacement (Old) (Use this procedure for all SX500's, SX1004's with serial number 905-005170 and below, SX7000's 911-005205 and below, and SXT7000's 970-005330 and below.)


P1557 Roller, Lateral, TeleRail
P1561 Bearing, Flanged, IGUS, TeleRail
A1533 Bushing, Pivot, TeleRail
Bar, TeleRail, Rear (Old)

The old TeleRail bar has two (2) rollers (P1557) attached to it. If this bar needs to be replaced, the new style bar will need to be ordered with the upgraded roller kits.

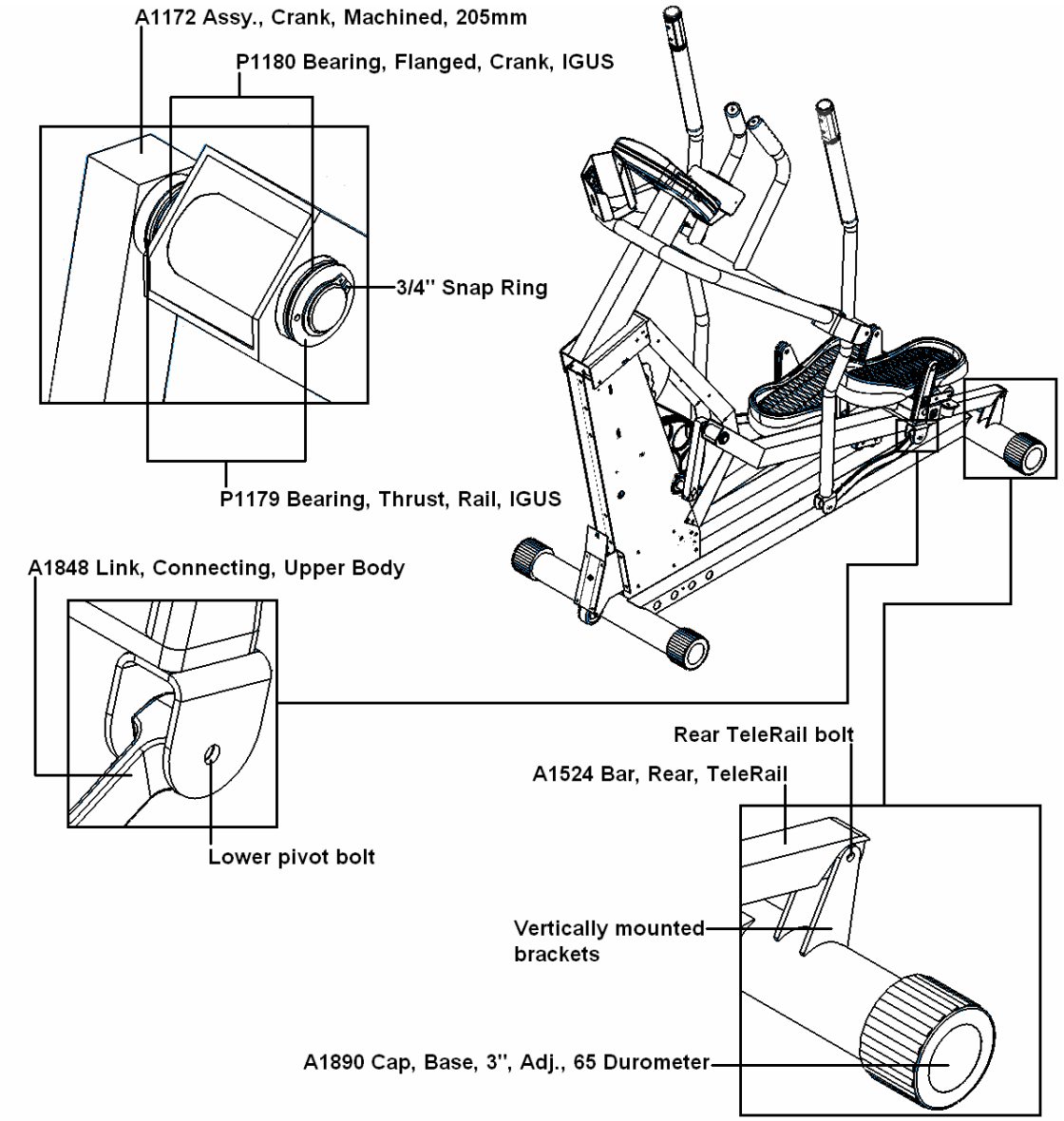
1. Remove the acorn nut at the rear of the TeleRail, using a 9/16" wrench. This nut is located on the bolt that holds the silver TeleRail bar to the black frame.
2. Using a 3/16" Allen wrench and ½" wrench or socket, remove the bolt, lock washers, and nut from the rear of the silver TeleRail bar.
3. Lift the rear of the TeleRail bar out of the vertically mounted brackets welded to the black frame. ***Do not lose the bushing (A1533) that goes through the rear of the TeleRail bar.***
4. Support the black TeleRail and pull the silver bar out the rear. ***Do not let the black TeleRail fall when pulling out the silver bar.***
5. Using a 5/32" Allen wrench, remove the bolt running through the middle of each roller (P1557).
6. Remove each roller and install the new roller in its place.
7. Use a small amount of green loc-tite on the end of each bolt. Insert the bolts back through the rollers and tighten down.
8. Reinsert the silver bar, roller side up, back into the black TeleRail.
9. Inspect the IGUS bearings (P1561) for damage. Replace, if needed.
10. Slide the bushing through the rear of TeleRail bar.
11. Place the rear of the TeleRail bar into the vertically mounted brackets welded to the black frame.
12. Line up the holes and insert the bolt from the outside to the inside.
13. Place the lock washer followed by the nut on the bolt. Tighten the nut.
14. Screw an acorn nut on the end of the bolt and tighten.

Z. Interior Roller Replacement (Use this procedure for SX1004's with serial numbers 905-005171 and above, SX7000's 911-005206 and above, and SXT7000's 970-005330 and above.)


A2447 Roller, TeleRail, Internal, Assy.
P1561 Bearing, Flanged, IGUS, TeleRail
A1533 Bushing, Pivot, TeleRail
A1524 Bar, Rear, TeleRail

1. Remove the acorn nut at the rear of the TeleRail, using a 9/16" wrench. This nut is located on the bolt that holds the silver TeleRail bar to the black frame.
2. Using a 3/16" Allen wrench and ½" wrench or socket, remove the bolt, lock washer, and nut from the rear of the silver TeleRail bar (A1524).
3. Lift the rear of the TeleRail bar out of the vertically mounted brackets welded to the black frame. ***Do not lose the bushing (A1533) that goes through the rear of the TeleRail bar.***
4. Support the black TeleRail and pull the silver bar out the rear. ***Do not let the black TeleRail fall when pulling out the silver bar.***
5. Using a 3/16" Allen wrench, remove the bolt running through the middle of the roller assembly (A2448).
6. Remove the roller assembly. ***Do not lose the flat washer under the roller assembly.***
7. Install the flat washer and then the new roller assembly.
8. Use a small amount of green loc-tite on the end of the bolt. Insert the bolt back through the roller and tighten down.
9. Reinsert the silver bar, roller side up, back into the black TeleRail.
10. Inspect the IGUS bearings (P1561) for damage. Replace, if needed.
11. Slide the bushing through the rear of TeleRail bar.
12. Place the rear of the TeleRail bar into the vertically mounted brackets welded to the black frame.
13. Line up the holes and insert the bolt from the outside to the inside.
14. Place the lock washer followed by the nut on the bolt. Tighten the nut.
15. Screw an acorn nut on the end of the bolt and tighten.

AA. TeleRail Removal

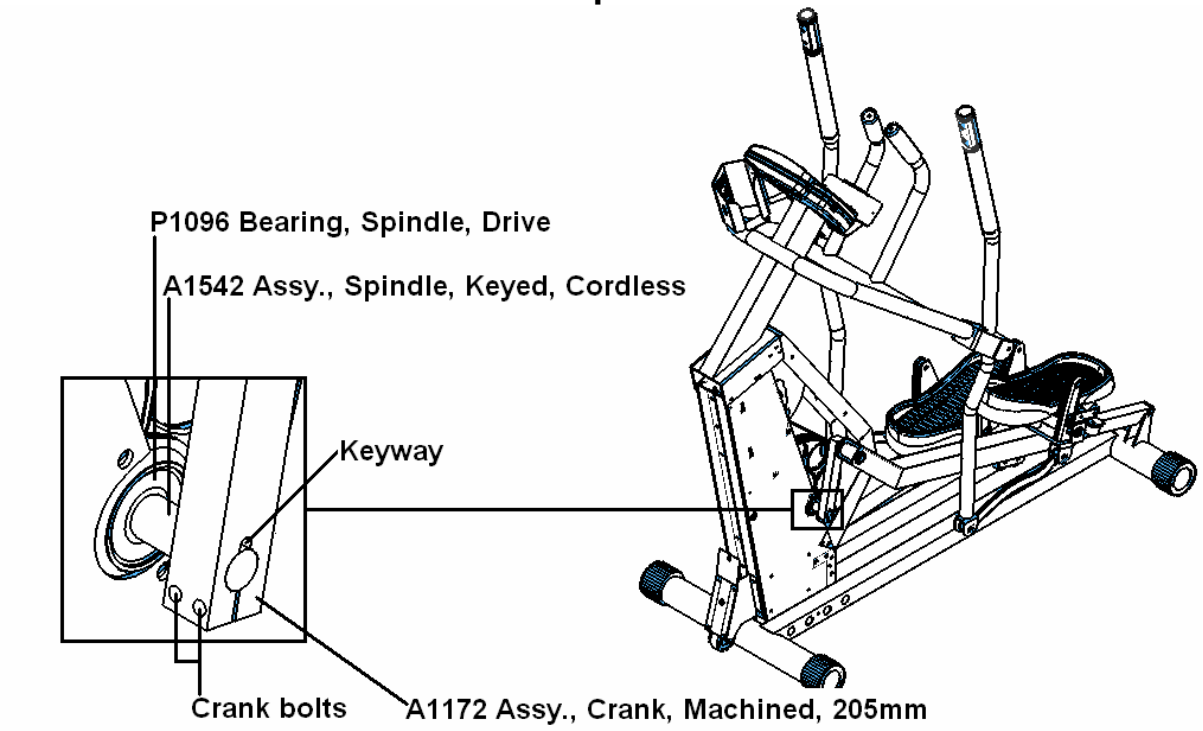

A1172 Assy., Crank, Machined, 205mm
P1180 Bearing, Flanged, Crank, IGUS
3/4'' Snap Ring
P1179 Bearing, Thrust, Rail, IGUS
A1848 Link, Connecting, Upper Body
Lower pivot bolt
Rear TeleRail bolt
A1524 Bar, Rear, TeleRail
Vertically mounted brackets
A1890 Cap, Base, 3'', Adj., 65 Durometer

1. Remove the acorn nut from the rear TeleRail bolt, using a 9/16” wrench.
2. Using a 3/16” Allen wrench and ½” wrench or socket, remove the bolt, washer, and nut from the rear of the silver TeleRail bar (A1524).
3. Lift the rear of the TeleRail bar out of the vertically mounted brackets welded to the black frame. ***Do not lose the bushing (A1533) that goes through the rear of the TeleRail bar.***
4. Support the black TeleRail and pull the silver bar out the rear. ***Do not let the black TeleRail fall when pulling out the silver bar.***
5. This step is for the SXT7000 only. If you don’t have an SXT7000, go on to step 6. Remove the acorn nut on the lower pivot bolt located just below the foot cushion, using a 9/16” wrench. Using a 3/16” Allen wrench and ½” wrench or socket, remove the bolt, washer, and nut from the lower

pivot point just below the foot cushion. Pull the upper body connecting link (A1848) out of the pivot joint. ***Do not lose the bushing (A1843, not shown) that the lower pivot bolt runs through the silver TeleRail bar.***

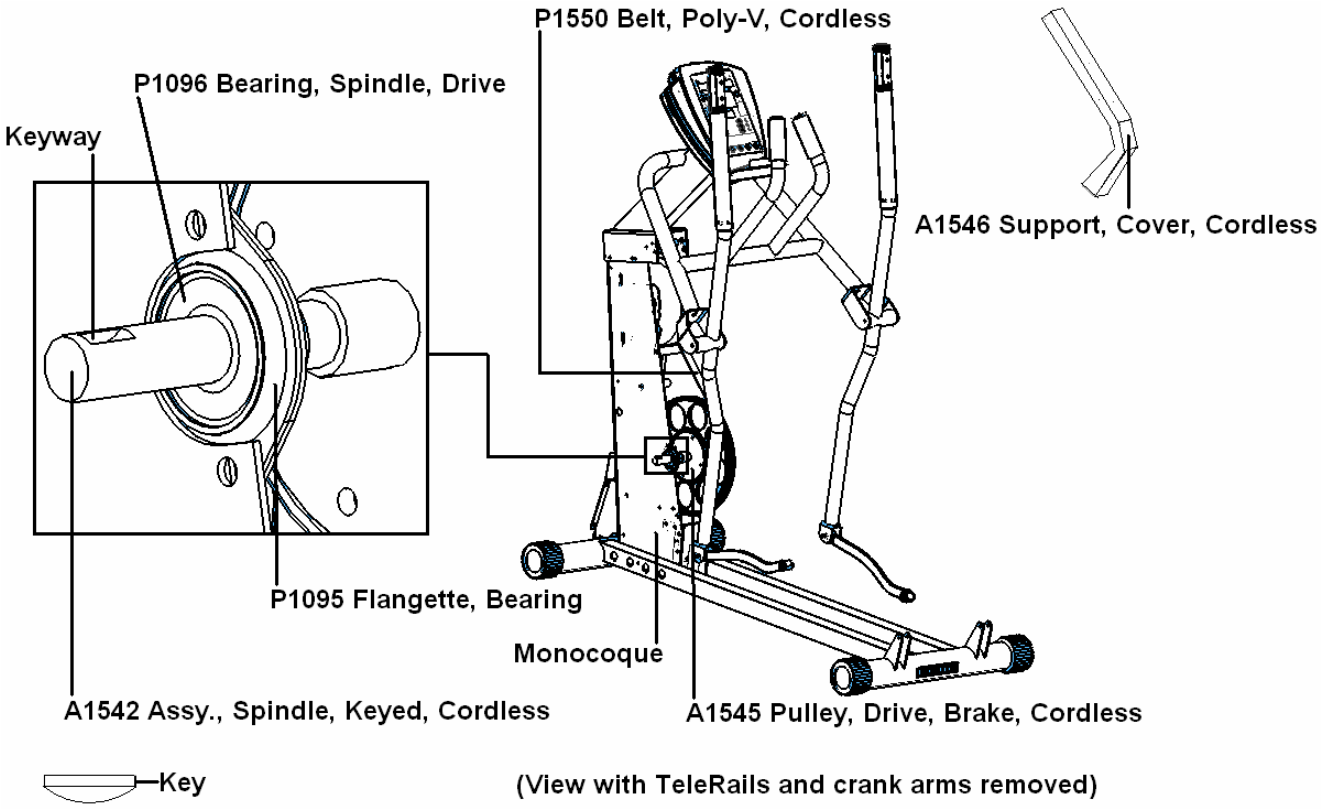
6. Using snap ring pliers, remove the ¾" snap ring holding the black TeleRail onto the crank arm (A1172).
7. Slide the IGUS thrust bearing (P1179) off the end of the crank arm shaft followed by the black TeleRail. ***Do not lose the IGUS thrust bearings. There is one (1) located on each side of the black TeleRail on the crank arm shaft.***
8. To install, reverse this procedure.

BB. Crank Arm Removal / Replacement

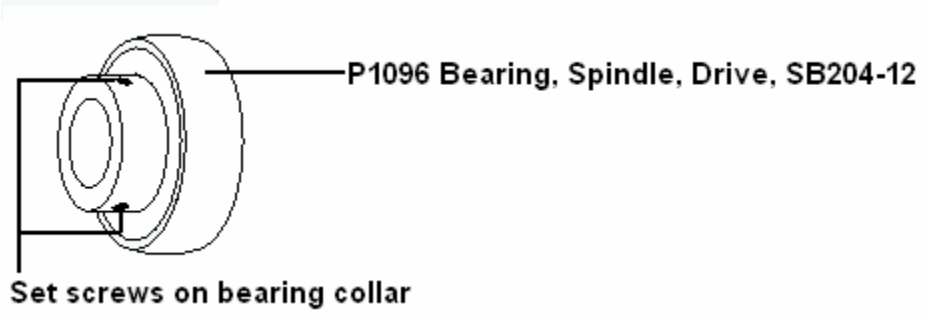


1. Detach TeleRail according to TeleRail Removal Procedure.
2. Remove both crank bolts, using a 7/16" wrench. Older machines had Allen bolts for crank bolts. These machines require a 3/16" Allen wrench to remove the crank bolts.
3. Pull the crank arm (A1172) away from the unit and off the end of the spindle crank assembly (A1542). ***Do not lose the woodruff key that is mounted in the slot on the spindle crank assembly shaft.***
4. Line up the keyway in the new crank arm with the woodruff key mounted in the spindle crank shaft.
5. Push the new crank arm onto the spindle crank shaft until the outside of the crank arm is flush with the outside of the spindle crank shaft.
6. Reinstall crank bolts and tighten to approximately 15 ft/lbs. of torque.
7. Install TeleRail by reversing TeleRail Removal Procedure.

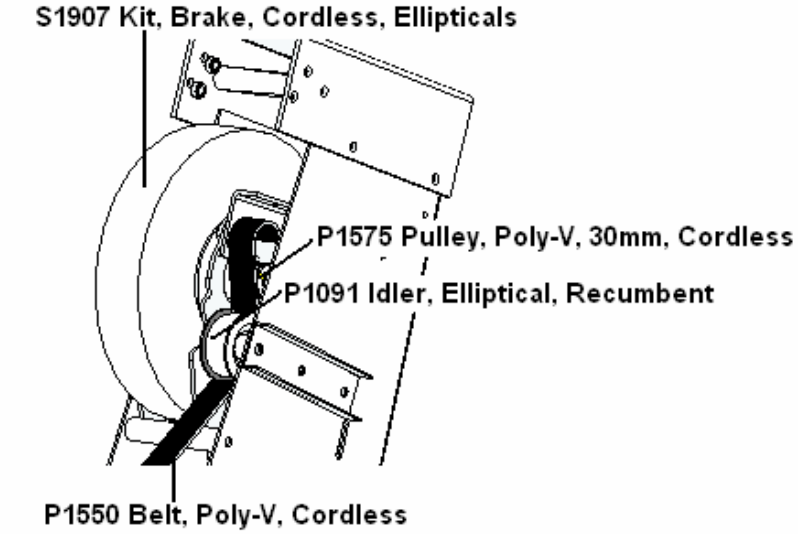
CC. Keyed Spindle Crank / Bearing Replacement



1. Remove the TeleRails, using the TeleRail Removal procedure.
2. Remove the crank arms, using the Crank Arm Removal procedure. ***Do not lose the keys when removing crank arms.***
3. Mark the position of the flangettes (P1095) on the monocoque. Mark flangettes in at least two (2) positions each.
4. Unhook the poly-v belt from the brake drive pulley (A1545).
5. Loosen the set screws on each bearing collar (P1096), using a 1/8" Allen wrench. There are two (2) set screws on each bearing collar. On the older ellipticals, the bearing collars faced toward the inside of the monocoque. Newer units, the bearing collars faced toward the outside of the monocoque.

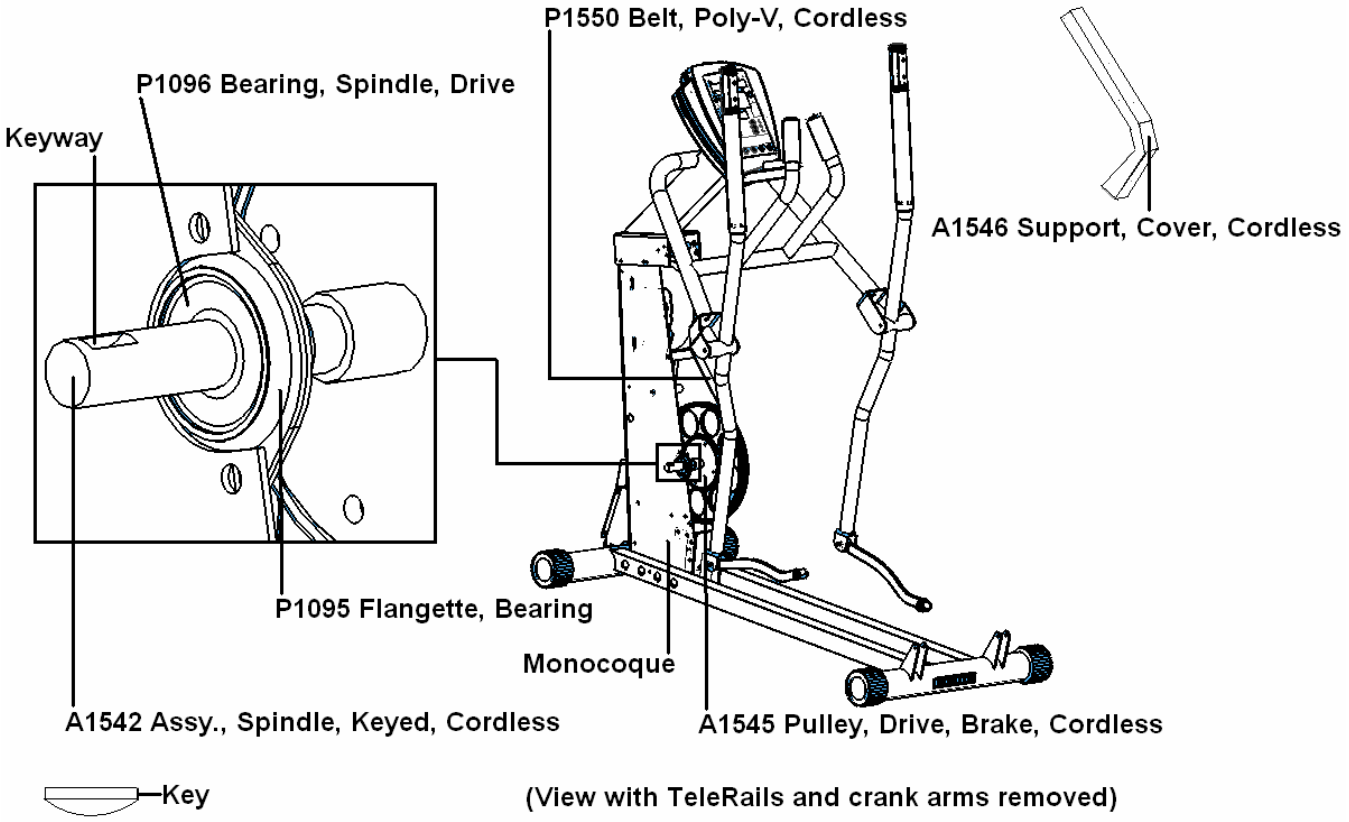


6. Move the spindle assembly (A1542) to the left until you can access the nuts on the backside of the flangettes mounted to right side interior of the monocoque. This step may require the use of a plastic or rubber mallet. ***Do not use a metal hammer. This can flare the end of the shaft so bearings will not be able to be removed.***
7. Using a ½" wrench and socket, remove the nuts, washers, and bolts mounting the flangettes to the monocoque.
8. Slide the spindle assembly and brake drive pulley out of the machine.
9. Transfer the bearings and flangettes over to the new spindle assembly. ***Make sure the bearing collars are facing towards the outsides of the machine.***
10. Install the new spindle assembly into the monocoque. The flangettes mount on the inside of the monocoque.
11. Run each bolt from the outside in, through the flangette mounting holes in the monocoque, both flangettes, followed by the lock washer, and hex nut. ***Do not tighten down.***
12. Line up the marks you made on the flangettes and monocoque, then tighten the bolts and nuts.

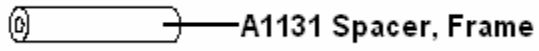

S1907 Kit, Brake, Cordless, Ellipticals
P1575 Pulley, Poly-V, 30mm, Cordless
P1091 Idler, Elliptical, Recumbent
P1550 Belt, Poly-V, Cordless

13. Place the belt onto the brake pulley. Loop the belt under the idler (P1091). Start the belt onto the back of the drive pulley (A1545). Move the crank arm in a forward motion to rotate the drive pulley, thus feeding the belt onto the drive pulley. ***Warning: Keep hands clear of the underside of the belt. Failure to do so could result in serious injury, including the loss of a finger. There will be approximately 110 lbs. of tension on the belt.*** If necessary, use a blunt object to push the belt when feeding it onto the drive pulley. Make sure the belt is in all grooves on the pulleys and is not rubbing on the side of the brake or idler. Rotate the drive pulley until the pulleys are all lined up and the belt is centered on both pulleys and the idler.
14. Tighten the set screws on both bearing collars.
15. Reinstall the crank arms by reversing the Crank Arm Removal procedure.
16. Reinstall TeleRails by reversing the TeleRail Removal procedure.

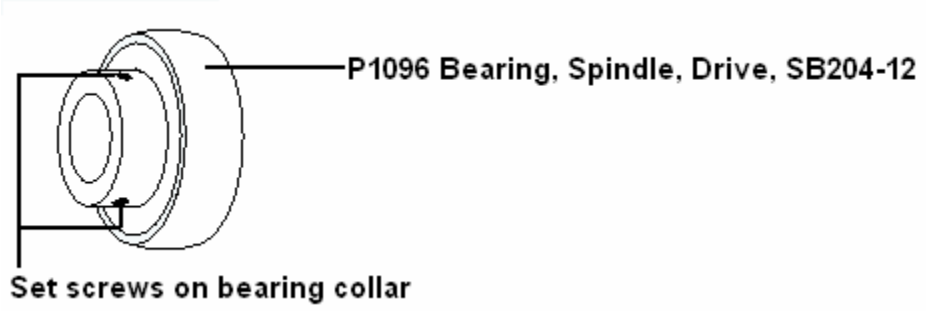
DD. Belt Replacement



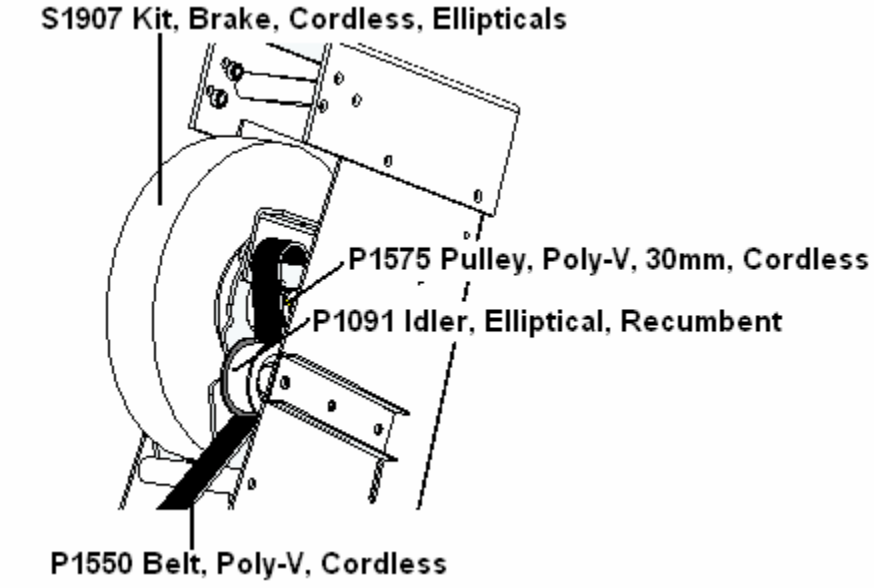
1. Remove the left TeleRail, using the TeleRail Removal procedure.
2. Remove the left crank arm, using the Crank Arm Removal procedure.
3. Mark the position of the flangettes (P1095) on the left side of the monocoque. Mark flangettes in at least two (2) places.
4. Unhook the poly-v belt from the brake drive pulley (A1545).
5. Using a ½" wrench or socket, remove the bolts holding the frame spacer (A1131) to the monocoque. Remove frame spacer from unit.



6. Loosen the set screws on the left bearing collar (P1096), using a 1/8" Allen wrench. There are two (2) set screws on the bearing collar.

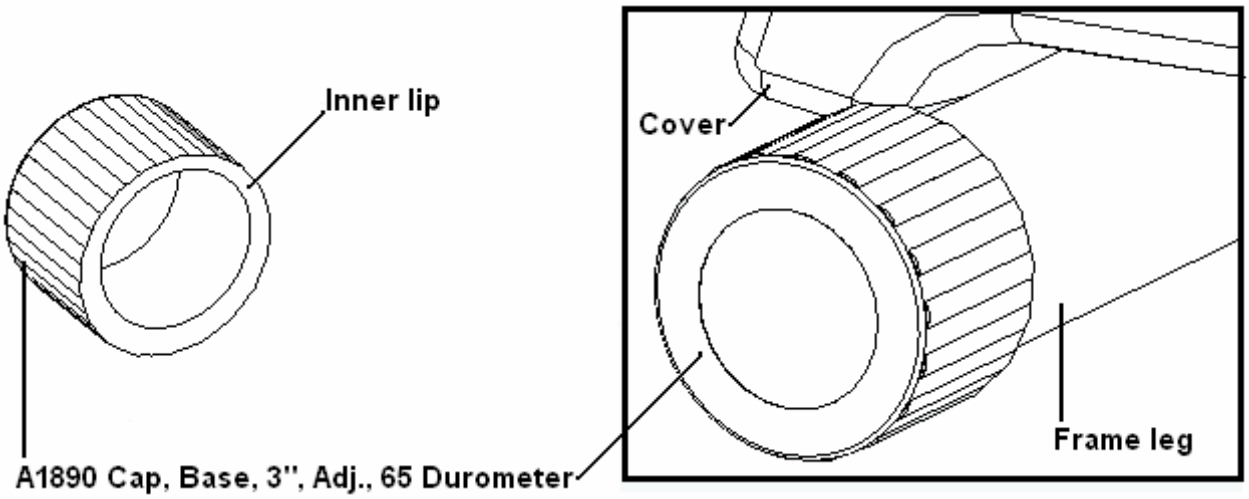


7. Using a ½" wrench and socket, remove the nuts, washers, and bolts mounting the flangettes to the monocoque.
8. Slide the left side flangettes and bearing along the spindle crank assembly (A1542) toward the flywheel.
9. Remove the old poly-v belt from unit.
10. Loop the new poly-v belt around the left end of the spindle crank assembly. Slide the belt through the gap between the spindle crank assembly and the monocoque.
11. Move the left side flangettes and bearing back into place. Reinsert the bolts, washers, and nuts but do not tighten. Line up the marks you made on the flangettes and monocoque, then tighten bolts and nuts.
12. Tighten the set screws on the left bearing collar.


S1907 Kit, Brake, Cordless, Ellipticals
P1575 Pulley, Poly-V, 30mm, Cordless
P1091 Idler, Elliptical, Recumbent
P1550 Belt, Poly-V, Cordless

13. Place the belt onto the brake pulley. Loop the belt under the idler (P1091) so that the smooth part of the belt makes contact with the idler. Start the belt onto the back of the drive pulley (A1545). Move the crank arm in a forward motion to rotate the drive pulley, thus feeding the belt onto the drive pulley. ***Warning: Keep hands clear of the underside of the belt. Failure to do so could result in serious injury, including the loss of a finger. There will be approximately 110 lbs. of tension on the belt.*** If necessary, use a blunt object to push the belt when feeding it onto the drive pulley. Make sure the belt is in all grooves on the pulleys and is not rubbing on the side of the brake or idler. Rotate the drive pulley until the belt is centered on both pulleys and the idler.
14. Reinstall the crank arms by reversing the Crank Arm Removal procedure.
15. Reinstall TeleRails by reversing the TeleRail Removal procedure.

EE. End Cap Replacement / Adjustment



1. Position an object under the frame leg to elevate the end cap (A1890).
2. Pull the rubber end cap off the end of the frame leg. For older versions with plastic end caps, a plastic or rubber mallet may be needed to tap on the inner lip of the end cap until it comes off the frame leg.
3. Replace end cap or make necessary adjustment to the existing end cap.
4. The mounting hole in the end cap is offset to allow leveling the machine. On legs that do not always contact the floor, rotate the end cap so a thicker section of the cap is next to the floor. Do this until the machine is level.

VI. Assembly Drawings and Part List